

BUSINESS MODELS IN THE ENTERPRISE SOFTWARE MARKETS

Drivers behind software providers' decisions concerning their business models

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Abstract

Software types can be roughly divided into two categories – tailored software and standard software. The evolution of enterprise software has started from a client-specific tailored software and moved forward to the standard software focusing on wider market needs. Recently, more service-oriented solutions as Software as a Service (SaaS) model enabled by the development of cloud computing have started to gain market share increasingly.

Decisions and business models of individual software companies are steered by numerous drivers. Clients' needs and buying behavior are in the center of software providers' business but they only cover a part of all drivers. For example, software ecosystems, the vendors (which usually are multinational technology providers) orchestrating them, and the relationships with other stakeholders do influence on the software providers' business. In addition, internal drivers as the history of a company, personnel's know-how, limited resources, strategic goals and visions have an impact in the company's decision-making. Also, trends and transformations covering the whole industry as well as the permanent evolution of technologies and software platforms shape the requirements for the business models of software providers frequently.

The most remarkable changes that have influenced on the business of software providers in recent years have been for instance the growth of cloud-based services, increasing interests in artificial intelligence solutions, changes in buying behavior and decision making in organizations operating in different industries and the competition between software ecosystems and platforms.

The diversity of needs in the enterprise software markets ensures that there is and will be demand for both, tailored software projects and standard software solutions. Software providers are often small companies who must concentrate on only one or a few business models in order to survive and keep up the pace in constantly transforming markets. So, many of them face difficult decisions; whether to invest on project-oriented business that generates revenue as a stable, constant stream or on the SaaS model which, in the best scenario, scales all the way to the global markets.

Keywords enterprise software markets, software providers, business models, software ecosystems, Software as a Service

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Tiivistelmä

Ohjelmistotyyppit voidaan karkeasti jakaa kahteen osa-alueeseen – räätälöityihin ohjelmistoihin ja vakioituihin ohjelmistoihin. Yritysohjelmistojen evoluutio on alkanut asiakaskohtaisista räätälöidyistä ohjelmistoista, joista se on edennyt markkinoiden tarpeet täyttäviin vakioituihin ohjelmistoratkaisuihin. Viimeisimpänä ohjelmistomarkkinoita on alkanut vallata palvelukeskeisemmät ratkaisut, ennen kaikkea pilvilaskennan mahdollistama Software as a Service (SaaS) -malli.

Yksittäisten ohjelmistoyritysten liiketoimintapäätöksiä ja liiketoimintamalleja ohjaavat lukuisat eri ajurit. Asiakkaiden tarpeet ja ostokäyttäytyminen ovat ohjelmistotarjoajien liiketoiminnan keskiössä, mutta ne kattavat vain osan ajureista. Esimerkiksi ohjelmistoekosysteemit, niitä ylläpitävät päämiehet, jotka ovat yleensä globaaleja teknologiatoimittajia, ja suhteet muihin sidosryhmiin vaikuttavat ohjelmistotarjoajien liiketoimintaan. Lisäksi sisäiset ajurit, kuten yrityksen historia, henkilöstön tietotaito, rajoitettu määrä resursseja, tavoitteet ja visio näkyvät yrityksen päätöksissä. Myös toimialalla vallitsevat trendit ja muutokset sekä teknologioiden ja ohjelmistoalustojen jatkuva kehitys luovat toistuvasti muutostarpeita ohjelmistotarjoajien liiketoimintamalleihin.

Merkittävimpiä ohjelmistotoimittajien liiketoimintaan vaikuttavia muutoksia ovat viime vuosina olleet muun muassa pilvipalveluiden kasvu markkinassa, kasvava mielenkiinto tekoälyratkaisuja kohtaan, muuttuva ostokäyttäytyminen ja päätöksenteko eri toimialojen organisaatioissa sekä ohjelmistoekosysteemien ja -alustojen välinen kilpajuoksu.

Yritysohjelmistomarkkinan tarpeiden monimuotoisuus pitää huolen siitä, että kysyntää niin räätälöidyille ohjelmistoprojekteille kuin ketterille valmisohjelmistoillekin on nyt ja tulevaisuudessa. Ohjelmistotarjoajat ovat usein pieniä yrityksiä, joille keskittyminen vain yhteen tai muutamaan liiketoimintamalliin on elinehto. Niinpä moni kohtaakin vaikean päätöksen; panostaako liikevaihtoa vakaasti tuottavaan projektiliiketoimintaan vai investoidako SaaS-malliin, joka parhaimmillaan skaalautuu globaaleille markkinoille asti.

Avainsanat yritysohjelmistomarkkinat, ohjelmistotarjoajat, liiketoimintamallit, ohjelmistoekosysteemit, Software as a Service

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1 Introduction

Enterprise software markets consist of a few extremely large multinational software vendors who cover a huge piece of the market share and an enormous number of software companies of all sizes representing roles as software provider, distributor, integrator, developer et cetera. Many software providers are small players who have very limited amount of resources. Hence, they must carefully consider what technologies to represent, how to differentiate in the competition and what business models to adopt, redesign and even abandon when necessary. Market trends, ecosystem-centered relationships and newly established distribution models are a few examples of forces that shake constantly the traditional confrontation between so-called standard and custom software as well as the position of all other business models in enterprise software markets. In the rapidly digitizing and evolving business environment, software markets welcome new type of players and business models constantly. Faster the world digitizes, faster the companies enabling that digitalization must adapt to changes. It would be bizarre to presume that a business model being designed and selected once could bring success forever. As software solutions and their development touch all kind of industries and companies, the client needs vary remarkably from case to case and shift rapidly over time. Therefore, the purpose of this paper is to identify the most crucial factors that software providers consider when making highly important strategic decisions around their current and prospected business models.

1.1 Motivation

Digitalization is a disruptive trend across industries globally and it has and will set new requirements for software markets and software providers. Software markets per se are relatively new markets that face rapid transformational forces constantly. While some companies provide their software as packaged products, others tailor their solutions based on each customer's needs individually. Simultaneously, new kind of sales and distribution models as Software as a Service (SaaS) shake the markets by providing advantages that hadn't existed before. It is still unclear whether one of the software types will take the position as a dominating model in future leaving the others in minor roles. Since innovations in software markets launch new unpredictable trends constantly and one of the

most disrupting trends from recent years – SaaS – is a relatively new one, there is a lot of unexamined “white space” to study still.

In academic literature, there is a lot of published studies focusing on software ecosystems and their high importance in software markets overall. However, many of them only cover the vendor's, who is the keystone of the ecosystem, point of view. The literature often scopes how the ecosystems take shape as bigger units around their platform holders instead of studying the authority or actions of the minor stakeholders in the ecosystem. As Manikas (2016) presents in his paper, many elements of software ecosystems as ecosystem health, motivation, actor activity, reusability, integration, and quality are not very well covered in the academic literature. Also, the strong transition toward SaaS business has been recognized in the recent studies clearly, but as this whole category of sales and distribution models is relatively new per se, there is an enormous number of unanswered questions in the academic discussion concerning the topic still.

1.2 Research questions

The framework for the study is supported by three research questions that together aim to identify the major stakeholders and drivers behind enterprise software providers' decisions concerning their business models. Each question focuses on one larger theme in the enterprise software industry: 1) the business models and the types of software, 2) software ecosystems and 3) drivers behind decision making and industry-level trends. The selected research questions for the study are:

1. What roles and business models do software providers have in the enterprise software markets?
2. What purposes do software ecosystems have for the software providers and how have and will the purposes change over time?
3. How different factors drive software providers' business model decisions and the transformation on an industry-level?

1.3 Scope of the study

Through the research questions the study aims to identify the main drivers that either differentiate individual enterprise software providers from others operating in the same markets or support larger industry-level trends and transitions. Through literature review and empirical research, the goal is to perceive both, past and current changes in enterprise software business models as well as to predict the directions of market transformation in

the future. Even if the questions can be interpreted as relatively open, a carefully considered target group in the empirical part of the study keeps the framework of the study narrow and, hence, relevant. The target group consists of enterprise analytics software providers in Finland. The number of data sources in nearly all industries and businesses have increased explosively in recent decades and it has enabled better insights gained from the data. Hence, interests in data analytics have and still are evolving constantly which makes the area of analytics software fascinating and topical target of the research. Closer details of the target group and the empirical research process will be presented in the section 3. The literature review delves mainly into academic sources, especially academic articles and research findings from this decade. Some older materials were used for the background of larger concepts, for example the initial source of the concept of business ecosystems – *The Death of Competition* by Moore (1996). Especially annual publications of International Conference on Software Business (ICSOB) included high number of relevant studies focusing on enterprise software markets. The literature review is presented in the following section.

2 Literature review

2.1 Enterprise software markets

Enterprise software markets consists of companies that develop and distribute software and value-adding services for the IT and business needs in all other industries. Enterprise software covers all software and software applications that companies use to support and run their core business operations (Boillat & Legner, 2013). These business-to-business markets are strongly driven by software ecosystems which this paper will delve into in latter sections.

BusinessWire.com (2018) has forecasted global enterprise software industry to exceed US\$ 575 billion by the year 2024. The top six enterprise software vendors (Microsoft, Oracle, SAP, IBM, EMC and Amazon) together held 42% of the market share in 2016. However, as Yrjökoski, Helander, and Jaakkola (2016) discovered, most software companies operating in Finland are very small and the relative number of small-business software providers is increasing still. Over 70% of the Finnish software companies generated less than 1 M€ revenue in 2011 (Yrjökoski, Helander, and Jaakkola, 2016). Hence, even though the largest multi-national enterprises are dominating big share of the markets, the industry is still very fragmented and constantly welcoming new businesses of all sizes.

From product perspective, Pietsch (2013, p. 102) divides the IT-product offerings in four main categories:

1. Off-the-shelf (licenses)
2. Licenses with service
3. Projects
4. System services as cloud computing

IT-products are usually not tangible, but they often include tangible elements as hardware. Other elements are software itself and services which may include for instance training, installation, consulting and programming. Schief, Pussep, and Buxmann (2013, p. 6) presented that 76 percent of software companies in the target group of their study generated more revenue with services than products. Effective marketing approaches to drive sales for service and product businesses differentiate from each other and, hence, the sales process of a complete set of IT offerings require wide perspective and deep understanding of the markets (Pietsch, 2013). This paper focuses mainly on the division of

different software types and service elements of IT-offerings as consulting, implementation and maintenance.

2.1.1 Two types of software business

IT software markets can be roughly divided into two main types of business. First type is “service businesses that develop tailor-made software based on customer specific needs” and second type is “software businesses that develop standard software products based on market needs” (Guvendiren, Brinkkemper and Jansen, 2014, pp. 115). Even though there seem to be permanent demand for both types of software solutions, the ongoing transformation in software industry shapes the position of each in the markets constantly. New business models as Software as a Service (SaaS) model utilizing cloud platforms provide new alternative to traditional software providers as well as open doors for new entrants. Referring to Boillat and Legner (2013), the evolution of software types has gone through custom software to packaged software and again to increasing service orientation, first in application service provisioning and more lately in cloud computing (especially in SaaS). In fact, packaging products and services has been much shorter time one of the major ways to provide value to customers in enterprise software industry than in most other industries (van Fenema, Koppius, and van Baalen, 2007). Albeit, every single one of these software solution types have had and still have strong position in the enterprise software markets and, hence, the growth of one hasn’t meant the extermination of another. Nevertheless, Pietsch (2013, p. 115) has stated that from the strategic perspective of an individual company the combinations of business models in an IT-related markets could be “viable but not efficient and effective”, as the requirements for mass products and individual projects varies so much from each other.

Fully tailored software is usually designed for one individual customer and built either as a professional service provided by a software company or in-house. For the companies providing this type of professional service, earning end-customers’ trust is extremely important as the software they are delivering does not exist yet when the project is sold. For these companies, the number of clients is usually small but the revenue per customer relatively high. Hence, customer relations play a crucial role for these type of software providers. Generally, the prices of standardized and packaged software are much lower than of tailored solutions. Companies providing them rely on strong marketing resources and large customer base (Tyrväinen and Selin, 2011). An easy assumption would be that software companies carefully target their offerings to certain industries where they

have strong expertise and, hence, readiness to discover industry-specific challenges that can be tackled with either tailored software development or standard software. However, Schief, Pussep, and Buxmann (2013, p. 6) discovered in their study that most software companies do not concentrate their business approaches on only one or a few industries but a broad set of industries instead. Nonetheless, their study also indicated that industry-specific solutions often generate better margins and greater customer value which, again supports the assumption presented before.

Guvendiren, Brinkkemper and Jansen (2014) have presented that in order to transit from customer-driven service business to more standardized product business, software companies can use so-called productization process. The process relies in standardizing the elements of the offering. These elements can be for example: 1) the early stages of product design as selecting the platform, 2) commercial elements as selling and delivering the product or 3) after-sales services. Hence, the software company is not tied to select harshly between providing tailored software solutions and providing packaged standard software. Instead, they can also decide to standardize or customize only parts of the products and services included in the overall solution. Table 1 displays how differently the two extreme types of software companies usually approach various business dimensions.

Table 1: Relevant dimensions for transformation (Guvendiren, Brinkkemper and Jansen, 2014, pp. 122)

Dimension	Customized software	Standard software
Software	Customized software project	Standard software product
Business focus	Meeting the customer needs within budget and time, contractual fulfillment	Gaining market share
Requirements gathering	Gathered from one customer	Gathered from whole market
Requirement selection	Select requirements per project (more or less a fixed list of requirements)	Optically selected subset of requirements
Marketing goals	Interaction, relationship and networks	Product, price, place and promotion (4P's), branding and differentiation
Software development philosophy	Waterfall	SCRUM agile development
Lifecycle	One release, then maintenance	Several releases based on market requirements
Development teams	Project-focused, people are assigned to multiple projects	Product-focused, self-managed, involved in the entire development cycle

Stakeholder involvement	High external, barely internal	High internal, low external
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Also, the sales (and acquisition) processes of different types of software varies a lot. Many enterprise software as Customer Relationship Management (CRM) and Enterprise Resource Planning (ERP) tools are usually sold through highly personnel-intensive process. Buying cycles can be from several months to years long. Thus, a lot of personnel resources are often tied to the process from both, the buyer's and the provider's side. That alone makes the software acquisitions very costly projects. The acquisition processes have often been run by the central IT department of a company even if the end-users of the software were located in other departments. This may complicate and slow down the buying and adoption cycle of software. Wenzel (2014) suggests that adopting app-store-like sales channels that are already common in B2C markets could shift the IT-driven top-to-bottom approaches in software acquisition and adoption processes toward more bottom-up business-driven approaches in enterprise software markets. This would enable more innovativeness in companies as complex IT-driven acquisition processes wouldn't cause bottlenecks in the adoption and deployment of new software as they do now. (Wenzel, 2014).

In addition, software products are usually evolved constantly through extensions and adaption to meet the criteria of their context. If such adaption wasn't done the product becomes less useful over time. Hence, from a software provider's perspective releasing and from an end-customer's perspective adopting the minimal viable product and developing it based on the customer's needs during the deployment phase may be more fruitful than aiming for the one-time release/deployment of a nearly perfect product. Nonetheless, deploying this paradigm in practice requires highly service-oriented stance from the software provider. (Fotrousi & Fricker, 2016). With standard software, the problem usually is that the software won't evolve based on an individual customer's but, instead, on the whole market's demand. Hence, even though the standard elements would fill most of the demand, in many cases the most optimal outcome can be only made by customizing the software for each customer individually. For example, in one very recent case study, two sentiment classification models that were developed in-house to analyze textual data generated remarkably more accurate results than the SaaS solution provided by a software company (Einolander, 2019).

Software companies can, of course, differentiate in other ways than by the level of offering customization too. Laatikainen & Luoma (2014, p. 246) for example divide the

most common revenue streams in software markets in six types: 1) monthly or annual subscription fees, 2) advertising-based revenue, 3) transaction-based revenue, 4) premium based revenue, 5) revenue from implementation and maintenance services and 6) software licensing. Software resellers in traditional software channel markets have mainly relied on licensing revenue but in today's ecosystems the increasing supply of Software as a Service solutions have brought other streams, especially monthly and annual subscription-based models, into the markets (Laatikainen & Luoma, 2014). So, the type of revenue stream is traditionally selected hand by hand based on the type of software solution.

2.2 Software ecosystems

2.2.1 Definitions of the concepts

“Nowadays, the software development effort is rarely constrained to a single company investing into developers, technology, marketing and sales activities. Forming alliances, participating and benefiting from the capabilities offered by a software ecosystem, or using open source software, are just a few examples of the development strategies that gain importance in software business.”

- Wnuk et al. (2014, pp. 212-213)

The concept of business ecosystems has existed in both business and academic literature for two decades already and the concept of software ecosystems nearly as long. However, the evolution toward current form of the software ecosystems have been an ongoing process since the beginning and, thus, it's not surprising that the definition itself has changed frequently across the way. Even though there are several divergent definitions for the software ecosystems available in academic literature, together they provide an extensive set of valuable meanings and perspectives that together help build comprehensive perception for the concept.

Already in 1996, Moore (p. 26) compared business environment to biological ecosystems and companies to species and organisms. He described a business ecosystem as “an economic community supported by a foundation of interacting organizations and individuals – the organisms of the business world”. The structure and layers of a typical business ecosystem defined by Moore is presented in the figure 1.

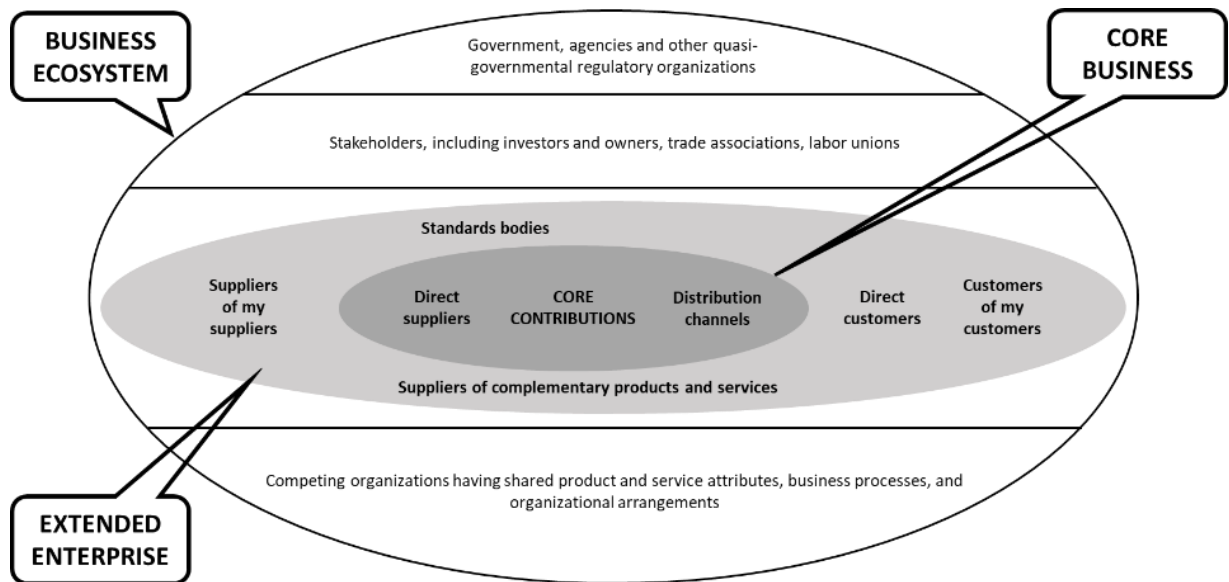


Figure 1: Typical Business Ecosystem (Moore, 1996, p. 27)

Even though the concept of business ecosystems easily provides an image of a large entity where size is a determinant characteristic, Moore (1996, p. 28) underlines that the business ecosystem can refer to small business initiatives as well. This is an important note to consider in this study as software ecosystems are usually defined as entities that have formed around global software vendors. Additionally, one of the main points in the concept of business ecosystems is that they obey traditional industry-level boundaries. In traditional industry-level competition new businesses have had relatively easy process to copy products and service models and this way dislodge the competitors from their market positions. But dislodging ecosystems and especially ecosystem leaders is much more difficult. Hence, in ecosystem-oriented approach companies are encouraged to make investments also in the ecosystem to enable greater total value for the customer instead of purely investing in the own core business. A simple two-way value creation cycle in the ecosystems is visualized in the figure 2.

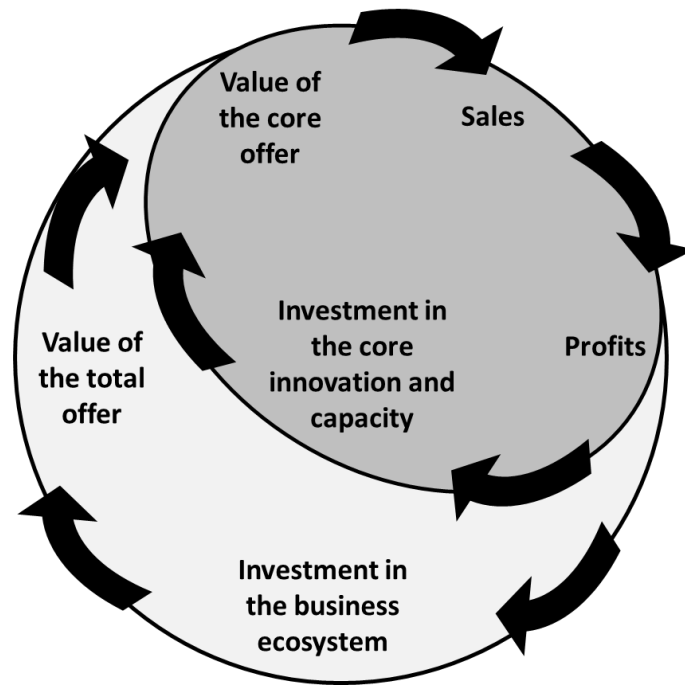


Figure 2: Value creation cycle in Business Ecosystems (Moore, 1996, p. 31)

Business ecosystems leverage especially small niche solutions to wider markets. As the number of businesses, products and services is constantly growing worldwide, there is always space for more ecosystems too. Since ecosystems enable stronger innovation capabilities for its stakeholders and are hard to attack, ecosystem-driven businesses tend to focus on seeking for untapped markets instead of tackling competitors' positions on their current markets. In fact, Moore (1996, p. 54) has outlined some disruptive changes in competition that ecosystem-oriented leadership should aim for. As mentioned, the ecosystem-center approach does not consider traditional industry-level boundaries. Thus, a company's goal should not be to win the competitors in the game set by them and this way become an industry leader but, instead, to disrupt the "old industries" to make them more suitable for the company's (and the ecosystem's) strengths and capabilities.

The original concept of business ecosystems and suggestions presented by Moore (1996) are still relevant for today's business environment even though they are over two decades old. This can be validated through more recent studies around the topic. Bosch & Bosch-Sijtsema (2014, p. 179) define three main characteristics that business ecosystems consist of: "(a) a symbiosis relationship in which the survival of all members implies the survival of the ecosystem. (b) Co-evolution in which partners co-evolve capabilities around new innovations and finally (c) ecosystems are often based on a particular platform, which is defined as tools, services or technologies used in the ecosystem that

enhance performance of its members”. These characteristics form the cornerstone for software ecosystems too.

Jansen, Finkelstein and Brinkkemper (2009, pp. 187-188) describe software ecosystem as “a set of businesses functioning as a unit and interacting with a shared market for software and services, together with the relationships among them” which are “frequently underpinned by a common technological platform or market and operate through the exchange of information, resources and artifacts”. Holmström Olsson & Bosch (2014, p. 18) have an alternative, though similar definition:

“A software ecosystem is usually defined as a commercial ecosystem consisting of a set of software solutions that enable, support and automate the activities and transactions by the actors. In a software ecosystem there is typically a company providing a software platform and a community of external developers providing functionality that extends the basic platform, and/or users either actively or passively contributing with knowledge, content, goods and services, connections or behavior to the ecosystem.”

As the several different definitions for software ecosystem presented by the academic community indicate, there has been a lot of research done around the topic, but it has been hard to the authors to find clear consensus among the definitions. The term software ecosystem has been in general use for more than a decade and all different definitions established in that era have built together some kind of boundaries of shared understanding to steer the academic community (Knodel & Manikas, 2015). Manikas (2016, p. 63) describe the issues of academic framework around software ecosystems well: “Research in software ecosystems, although the activity of over 10 years, is still characterized as premature with significant lack of software ecosystem specific theories that are solid, mature, generic, and detailed enough to be measurable and transferable”. Authors have noticed that the concept of software ecosystems is constantly evolving and, hence, the borders around it in academic context should be redefined (Knodel & Manikas, 2015).

2.2.2 Purpose of software ecosystems

Sales and marketing operations in ecosystem models can be described as more versatile and modern approaches compared to those in traditional channel models as the one displayed in the figure 3. As Knodel & Manikas (2015, p. 60) briefly describe regarding the time before the establishment of software ecosystems, “software engineering has been dominated by stand-alone development organizations and collaborations between

contractors, integrators and suppliers”. It’s easy to notice that the same structure has been existent in the framework of software sales and distribution too. Channel sales is an important task in software ecosystems still but not the only core operation. Generally, the term of channel sales or simply channel focuses on resale process. Nevertheless, in software ecosystem traditional resale model where vendor supplies the product through the distributor and resellers to the end-customer do not exist as straightforward as in many industries, for instance in retail. In fact, the terms “reseller” and “channel” seem to be vanishing fast in the context of software ecosystems and being replaced by more vague substitutes as “business partner” and “ecosystem” in IT industry.

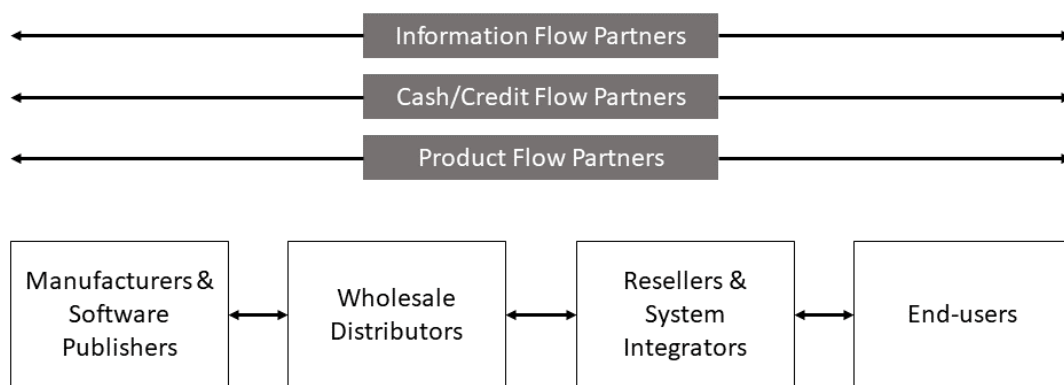


Figure 3: Traditional distribution-side supply chain in IT industry (Gosatn, Malhotra and El Sawy, 2004, p. 25)

Knodel & Manikas (2015) have presented a *meta-model of software ecosystem building blocks* (figure 2) to demonstrate the consortium of elements as actors, incentives, technology and contribution in software ecosystems as well as the environment it exists in. The model displays well how multidimensional entity the software ecosystem usually is – even from only one actor’s point of view. In the model, **actor** refers to individuals, organizations, governmental entities and social communities that drive the ecosystem through direct or indirect collaboration or competition. They provide the contribution to the ecosystem. **Incentives** are elements that motivate the actors to participate in the ecosystem. **Common technology** is usually in the core of the software ecosystem and refers to platforms, protocols and infrastructures for example. **Contribution** refers to the operation and offerings of the actors. It includes software per se but also solutions, services et cetera. **The environment**, which can be physical or digital, sets the constraints for the

software of the ecosystem. They may refer for instance to specific hardware, legal policies or social rules. (Knodel & Manikas, 2015, p. 62).

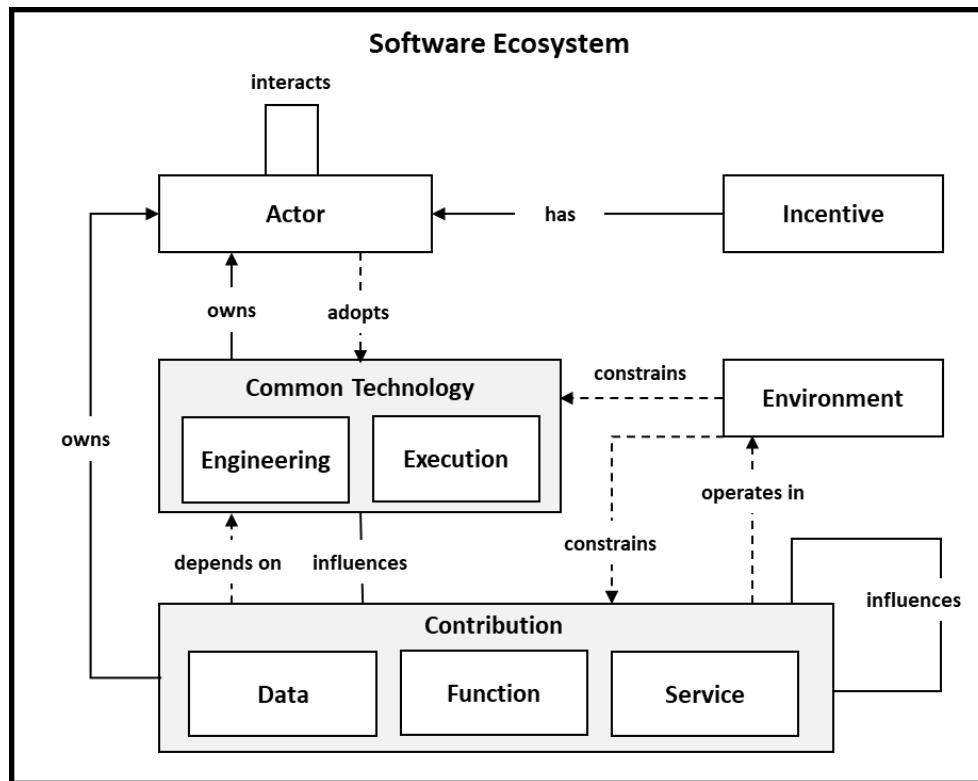


Figure 4: Metamodel of ecosystem building blocks (Knodel & Manikas, 2015, p. 62)

Many drivers for the transition from traditional software channels toward ecosystems are obvious. In many industries, organizations have started to centralize resources more on their key competencies by outsourcing operations that do not belong in their core business. Transformations like this have also occurred in the software industry during the past decades. This has widened especially the software vendors' focus from end-customers to networks between the vendor and suppliers, value-added resellers and many other stakeholders. This evolution in the vendors' perceive has created new requirements in the whole ecosystem concerning for example the stakeholders' business models and openness of products and interfaces. (Jansen, Finkelstein and Brinkkemper, 2009). However, even though the transition toward ecosystem-driven markets have generated more requirements for the actors in ecosystems, the overall benefits for the stakeholders have also become greater. Holmström Olsson & Bosch (2014, p. 18) list six general reasons why ecosystem-driven approach has become so common in software industry:

1. To increase value of the core offering to existing customers and users.

2. To increase attractiveness for new customers and users.
3. To decrease costs for commoditizing functionality by sharing maintenance costs with other stakeholders.
4. To accelerate innovation through open innovation in the ecosystem.
5. To increase collaboration with partners in the ecosystem and share costs of innovation.
6. To “platformize” functionality developed by partners in the ecosystem.

To function in the software ecosystem and to utilize value co-creation with the ecosystem stakeholders, companies must often open their products and product lines up for the extensions of external developers. Thus, the challenge obviously is how to access to different stakeholders and their value-adding capabilities without harming existing business opportunities and customer relationships. Companies must for instance decide which part of software development should be made in-house and which should be outsourced to other stakeholders in the ecosystem. These questions should be considered in companies when aiming to identify and design business models that lead to greater revenue but also to stronger collaboration in the ecosystem (Holmström Olsson and Bosch, 2014). As mentioned earlier, companies in software industry focus more often on their internal efforts on areas that differentiate them and, hence, they actively outsource as much as possible to the external stakeholders. This trend is constantly increasing the importance of ecosystems (Bosch & Bosch-Sijtsema, 2014). However, some authors as Hyrynsalmi et al. (2015) question whether participating in an ecosystem truly leads to the greater benefits as unambiguously as the academic literature suggests.

In academic literature, *ecosystem health* is a term that emerge in some researches focusing on software ecosystems and value co-creation. By understanding and measuring the healthiness of the ecosystem, an individual actor may compare available ecosystems and identify their strengths and weaknesses. van Angeren, Jansen and Brinkkemper (2014, p. 3) describe the health of the software ecosystem as follows: “The health of an ecosystem is determined by the capability of an ecosystem to; persistently produce meaningful outputs (productivity), survive market disruptions (robustness) and create niches in the ecosystem (niche creation).” High density in the company networks usually represent robustness and the level of specialization. Network density can be measured based on the ratio between the relationships that exist in the ecosystem and those that can theoretically be initiated (van Angeren, Jansen and Brinkkemper, 2014). By these variables

(productivity, robustness and niche creation) it is possible to measure the value for ecosystem health (Hyrynsalmi et al. 2015). Nevertheless, Hyrynsalmi et al. (2015) proposes that several other factors should be included in the concept of ecosystem health, for example the satisfaction of the stakeholders participating in it.

2.2.3 Typical roles in the software ecosystems

From simplified point of view, a traditional software channel consists of three tiers on top of end-customers – a software vendor, (value-added) distributors (VADs) and (value-added) resellers (VARs). In the concept of software ecosystems, several other roles as independent software vendors (ISVs), system integrators (SIs) and IT consultancies are involved too. Those so-called typical roles are not cast iron, and, in many cases, it is hard to place a company in only one of these molds (Handoyo, Jansen and Brinkkemper, 2013). Handoyo, Jansen and Brinkkemper (2013) also remind that it is not always clear whether a company should be counted as a part of the ecosystem or not at all. Next, the typical roles of the actors in the software ecosystems will be presented.

Software vendors are usually large multinational enterprises producing technology as software and platforms to help companies in all kind of industries run their business. They actively build and develop the ecosystem around them by partnering with third party companies that usually represent one or more roles stated above. From ecosystem perspective the vendor is a central firm (in other words a keystone or a platform firm) who is “the dominant player and orchestrator in the ecosystem” (Bosch & Bosch-Sijtsema, 2014, p. 183). Actions and product releases by multinational software vendors have impacted strongly on the global market growth of packaged software solutions. That development, again, has increased their demand on ecosystems’ capabilities to enhance the implementation processes of those solutions. “From a vendor perspective, the main advantage of packaged software lies in its large-scale tradability.” (van Fenema, Koppius, and van Baalen, 2007, p. 585). Fotrousi et al. (2014) remind that every ecosystem platform owner has specific responsibilities as setting ecosystem’s performance objectives and managing the ecosystem to achieve them. On top of the packaged software, the vendor may also provide a platform as a service (PaaS) to create subsidiary markets where ISVs and other stakeholders can develop and provide their own solutions to the end-customers (Wenzel, 2014). Usually the PaaS provider also admin a marketplace to market and distribute the standard software developed by the third parties to the end-customers

(Wenzel, 2014). However, Knodel & Manikas (2015) point out that not all existing software ecosystems have arisen around a platform.

Value-added distributors (VADs) can be defined as the intermediaries in a channel (Holmström Olsson & Bosch, 2014). Their business focuses on seeking for more partners to join the ecosystem and driving those partners' business forward. VADs provide training, technology-related and operative support as well as market development to their partners. They may also distribute hardware products and software licenses from the vendor to the resellers and other ecosystem stakeholders. There are usually limited numbers of VADs in each vendor's channel but still more than one. The competition between VADs in an ecosystem motivates each of them to drive their and their clients' business forward increasingly. Also, thus the success of the vendor's channel is not dependent on only one VAD's actions which makes the channel less fragile. A VAD's goal is naturally to have more successful and profitable partner network than what the competing VADs have. However, the companies that the VADs have partnered with may also be competitors of each other. This may complicate partnering with all potential resellers and other business partners who may be willing to enter the ecosystem. Holmström Olsson and Bosch (2014) found also out that some software providers feel that important feedback from end-customers gets lost because the complex hierarchy of their ecosystem stakeholders as distributors.

Other software partners than VADs can exist in many forms. Bosch and Bosch-Sijtsema (2014, p. 183) call them broadly as "complementors and component players who provide a product or service that complements the platform or product of an ecosystem and enhances the value of the platform". Value-added resellers (VARs) are companies who may focus only on selling offerings from one specific product area as business analytics solutions and software. In this chosen product area, they may provide software from several vendors to their clients which are the end-customers outside the ecosystem. Hence, inter-brand competition between vendors exists in resellers' offerings. On the other hand, VARs may also exclusively provide software from only one vendor. Per vendor, they usually choose at least one VAD to work with, but the number can be higher in some cases. In some cases, the VAR may use one vendor for a certain product or solution area, for example all software and another for other areas, for example all hardware. As many VARs and other companies in software ecosystem are competing against each other, they are constantly struggling with the challenge of how to maximize the capacity of the ecosystem while minimizing the opportunities for the competitors in the ecosystem

(Holmström Olsson & Bosch, 2014). To be able to manage relationships with the end-customers who already act with other players in the ecosystem, it is important for software providers to understand other stakeholders' roles and motivation too (Holmström Olsson & Bosch, 2014).

VARs and other business partners are usually free to choose the technology they provide if they meet the requirements as certifications set by the vendors. Hence, they are often not reselling exclusively one vendor's offerings. This may cause the dilemma where the reseller is driving business for the vendor in one solutions area but simultaneously competing against it in other areas. Generally, providing competing products also creates an opportunity of bait and switch marketing which harms one vendor while supports other but it seems to be uncertain still whether this drawback exists in software markets. In addition, other traditional channel-related challenges as inter-brand and intra-brand competition might exist in software channels as they do in many other industries' channels.

The broadminded common goal in the business relationship between software vendors and their value-added resellers is value creation. A vendor aims to have VARs in their ecosystem increasing the sales of the vendor's brand and decreasing the vendor's total costs of sales process. To complete the task without causing risk to the vendor's brand image the VAR must meet technical requirements and take care of the after-sales services. To recognize and control the risks, the vendors allocate resources in the relationship. VARs, again, expect to get support from the vendor as well as financial compensation for the completed sales. Negative VAR relationship may harm the performance of the vendor's brand as well as increase the vendor's total costs over revenue and profit. Gupta, Väättänen and Khaneja (2016).

Software partners can also be consultancy companies who do not sell or distribute software per se but who still must have the expertise in one or more vendors' offerings. Consultancies may be able to drive business for vendors, VADs, VARs and other ecosystem stakeholders when being engaged to end-customers' IT projects and they may practice software development with the vendor's tools and platforms. System integrators (SIs) again provide services to the end-customers and need high level of technical expertise in available software. Bosch and Bosch-Sijtsema (2014, p. 183) summarize integrators' role as follows: "integrator brings together the parts provided by different ecosystem players into an integrated solution for the end-user". They have more technical role in the IT projects than what pure consultancies or VARs usually have. Nevertheless, an integrator is not necessarily an external stakeholder but, instead, for example the vendor or the end-

customer may carry this role too (Bosch & Bosch-Sijtsema, 2014). SIs may also provide technology of their own just as consultancies and other stakeholders which might compete against the vendors' offerings in the ecosystem too. On the other hand, consultancies and SIs may also have resale agreement with a vendor which makes them (value-added) resellers as well even if that wasn't the core of their ecosystem business.

2.3 Trend toward Software as a Service model

Software as a Service (SaaS) refers to both, software delivery model and a business model. It can also be described as "the delivery of multi-tenant, virtual, web-based and configurable application that is accessible through browser" (Laatikainen & Luoma, 2014, p. 243)

SaaS is a way to package, market and distribute software. In academic literature, the industry-level trend toward increasing popularity of SaaS has been recognized already over ten years ago. Schütz, Kude and Popp (2013, p. 131) describe the model as one of three main services that cloud computing has enabled: "SaaS is a part of the services offered within a Cloud Computing environment, referring to the hardware and software of large data centers. Accordingly, Cloud Computing comprises the services being sold from these data centers: either software (SaaS) or utilities (Platform-as-a-Service and Infrastructure-as-a-Service)". Fast development of cloud computing has brought SaaS into the markets as a distinctive option for traditional types of software solutions and products.

Yrjökoski, Helander, and Jaakkola (2016, pp. 126-127) brings up the numbers in Finnish software markets that validates the on-going transformation in the software industry of Finland. In 2005, 49% of revenue in the Finnish software markets were generated through license-based sales but its share dropped to as low as 15% by 2008. However, in 2009 SaaS and Application Service Provider (ASP) sales carried only 10% of the market share together still and, thus, the growth of SaaS markets hadn't accelerated as much as was generally expected (Yrjökoski, Helander, and Jaakkola, 2016). The difference between ASP and SaaS is that "SaaS is designed to serve multiple customers with the so-called multitenant model" which ASP isn't (Boillat & Legner, 2013, p. 41). Boillat and Legner (2013) argues that one major reason why the growth of SaaS has been so slow in enterprise software markets is the complexity in enterprise customers' needs. But another roadblock can be found on supplier side where many software providers have seen the introduction of SaaS models too demanding and profoundly different compared to their traditional business models. Nevertheless, it has been underlined in academic

literature that cloud-based applications as Software as a Service (SaaS) model have already substantially changed the ways of customers running their business and of software being sold and delivered. These changes also have influences on software ecosystems and partnerships. And, interestingly, the partners providing new kind of cloud-based models do not necessarily have so-called cloud background. Schütz, Kude and Popp (2013).

In addition, Boillat and Legner (2013, p. 43) provides systematic division between Enterprise SaaS, Pure play SaaS and Self-service SaaS (table 2). While most academic literature focuses on the elements that are mainly visible in Pure play SaaS and Self-service SaaS, it is interesting point of view to also consider more unique characteristics of SaaS business model to reflect especially on large enterprise customers' needs.

Table 2: SaaS business models: Enterprise, pure play and self-service (Boillat & Legner, 2013, p. 43)

		Enterprise SaaS	Pure play SaaS	Self-service SaaS
<i>Customer-facing elements</i>	Value proposition	A mass-customized but complex application that also requires support services	Horizontal, standardized web-native application	A very simple application that is easy to adapt
	Customer segments	Larger enterprises and their IT managers and top executives	SMEs, middle management and end-users	Adapted first by end-users and individual customers, then SMEs
	Customer relationships	High-touch, trust-enhancing customer relationships with tailored contracts	Less human contact in deployment required than traditionally, owing to simpler applications	Fully automated self-service; as little interaction with the customer as possible
	Channels	Perform personal sales and employ channel partners	Sales channel is push-oriented, and SaaS firms engage in inbound, high pressure sales	Outbound and viral marketing used to attract customers to the vendor's home page. Landing page critical in turning prospects into customers
<i>Resource-based and value configuration elements</i>	Key resources and activities	Possess domain expertise and utilize an ecosystem of companies as a resource	Both domain expertise (to include best practices into the application) and application development capabilities	Close to zero marginal costs
	Key partners	Use partners to deliver value-adding applications and services	IT service providers for infrastructure and support services	-
<i>Financial elements</i>	Revenue streams	Vendors charge an entry fee, recurring fees and service fees	Small entry fee and a recurring fee	Use of freemium model, ad-based revenue or small recurring fees

	Cost structures	Varying marginal costs, owing to the long sales cycles and required support	Initial development costs may be high, but firms aim for minimal marginal costs	-
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Overall, an industry-level transformation from more traditional models to SaaS model has relieved end-customers from issues concerning software updates, hardware maintenance and capacity planning. Total costs of software ownership have also decreased by the transformation. However, the trend toward SaaS models has brought up new challenges for instance in vendors' value proposition and channel revenue stream models. Software ecosystems still play an important role as go-to-market framework for SaaS providers. It is possible that the rise of SaaS business models will shape already existing software ecosystems that have been remarkably dependent on traditional on-premises businesses. The role of SaaS providers can be similar as the role of resellers, systems integrators or software developers in software ecosystems so far. Compared to more traditional software solutions, SaaS has usually reduced possibilities of customization. This has raised an interesting question of whether SaaS models will reduce competing software providers' possibilities to differentiate from each other in software markets (Schütz, Kude and Popp, 2013). Different revenue logics and pricing models may be used as differentiative factors with the SaaS products though (Laatikainen & Luoma, 2014). For companies who have traditionally sold their standard software through licenses, SaaS model enable another even though not necessarily fully substituting delivery option. For example, IBM has provided their Cognos Analytics software as a cloud-based service in addition to the license-based version since releasing it in 2015 to replace Cognos BI which was available as on-premises software only. From pricing perspective, the same software can now be either acquired as licenses that are installed on premises and purchased once or subscribed as SaaS with monthly subscription-based payment. In addition, the support for the old Cognos BI 10 ended in 2018 which is a simple example of the lifecycle-related issues that traditional on-premises software carry but in SaaS environment customers do not need worry about as much. (newintelligence.ca; solita.fi). Nonetheless, for the vendors it can be seen somewhat reasonable not to shift all offerings to cloud environment at the same time or within a short timeframe. As Novelli (2013) has presented, cannibalization can be identified in the markets of all kind of software components. Accelerating the utilization of cloud environment and the sales of SaaS solutions may increase the risk of cannibalization decreasing still profitable server and on-premises software sales.

Table 3: Trends engendering sales cannibalization in IT-related markets (Novelli, 2013, p. 40)

	Information Goods	IT Products and Services
Dematerialization	Physical manifestation vs. purely logical manifestation	Special purpose devices vs. software applications on general purpose devices; Online vs. traditional channels for software sales and distribution
Servitization	Discrete purchases vs. on-demand services	<i>Enterprise servers vs. cloud computing; On-premises applications vs. software-as-a-service</i>

From software ecosystem perspective Schütz, Kude and Popp (2013) present three major effects that the trend toward SaaS models will cause. First, SaaS will change the partner roles in software ecosystem. Second, the relationships between software vendors and the partners will change. And, third, it will cause changes in the competition among organizational actors and, hence, between and inside the ecosystems. Also, there is one major change directing to the roles in the ecosystems. The partner tier in the software ecosystems has been traditionally dominated by value-added resellers. Now, as the ecosystems shift to hybrid model where SaaS model exist, ISVs gain power over VARs. This change enables ISVs to build solutions that fill the niche demand in the markets and to integrate their services on partners' SaaS solutions through cloud computing (Boillat & Legner, 2013; Schütz, Kude and Popp, 2013). Simple resales model that VARs has relied on will become more difficult to implement as sales and distribution will move online where the vendor can orchestrate them efficiently and agilely without external help. Schütz, Kude and Popp (2013); Boillat & Legner (2013).

Thus, value co-creation between the partners in the ecosystem will conquer market share from resales business and become more important if not the most important purpose of the ecosystems. Boillat and Legner (2013) highlight that in SaaS model more stages on the customer service path and life cycle will be completed online by the software vendor alone instead of different ecosystem partners as has traditionally been done in enterprise software markets. For example, technical support is usually offered on the same online platform as the software itself today. Hence, the authors suggest that in future the role of ecosystems partners as value-added resellers and distributors should focus more on supporting the end-customers in their deployment process and evaluation of potential SaaS solutions, and less on maintaining the customer relationships for the SaaS vendors.

As software providers face new requirements and challenges but also opportunities when adapting this “new business environment” (as Tyrväinen and Selin [2011] describe the markets influenced by SaaS), they must rethink their business. Holmström Olsson and Bosch (2014) state that those companies shifting from software resales to providing systems, solutions and services require changes in their strategies and relationships; the focus should transit from internal processes to dynamic relationships, synergies and value co-creation. However, one notable thought is that while software providers generally highlight the importance of mitigating competition by building long-term strategic partnerships with stakeholders in the ecosystem, mitigating-oriented goals per se reflect short-term benefits and may actually increase the vulnerability to long-term risks (Holmström Olsson and Bosch, 2014). As the ownerships and other responsibilities move from the end-customer to the software providers when shifting from on-premises markets to SaaS markets, system integrators’ role will decline also. End-customers are no longer required to carry the risks of large IT projects where systems integrators have played a big role but, instead, they are more eager to engage in long-term relationship with the software provider. Hence, the trust between the end-customer and the software providers becomes more crucial success factor from this perspective too. Schütz, Kude and Popp (2013).

Increasing usage of SaaS models also means increasing IT-related business process outsourcing among the clients in a big picture. In the SaaS model, IT is owned, hosted and delivered by a software provider instead of the end-customer. Hence, partners providing SaaS must take responsibility of all these actions which usually hasn’t been the case with traditional on-premises resales models (Schütz, Kude and Popp, 2013). On the other hand, SaaS providers can outsource the infrastructure required for their service to third parties as vendors providing IaaS and, hence, focus even more purely on the elements of their own service. This, again, brings up possibilities for IaaS providers to achieve stronger position in software ecosystems (Boillat & Legner, 2013). On the contrary, software providers have now an interesting opportunity to not only provide software as a service but also their platform as a service for the external developers. In this case, their SaaS customers can more straightforwardly get an access on the platform where they can either distribute their own solutions or subscribe other services, either established by the initial vendor/platform provider or by the third parties developing add-on solutions. The comparison between SaaS framework alone and so-called SaaS+PaaS framework is presented in the figure 3. Authors describe the new ecosystems that form in SaaS+PaaS environment as “a vertically

integrated ecosystem of infrastructure and technology providers, add-on developers, and channel partners” (Boillat & Legner, 2013, p. 53)

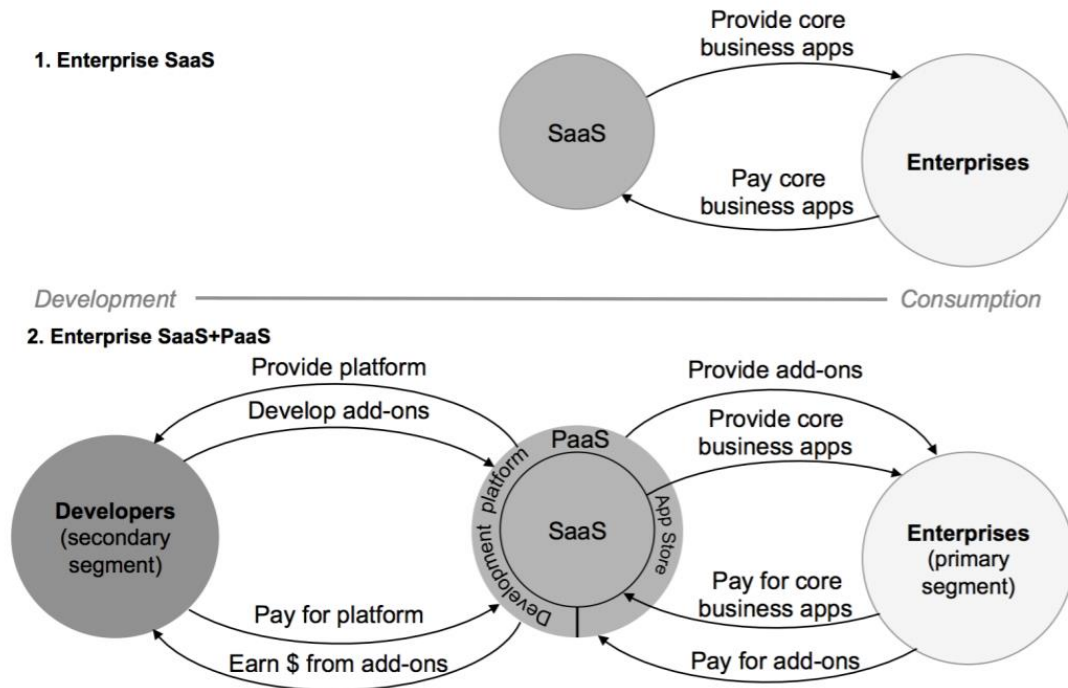


Figure 5: Two complementary business model configurations in cloud-based enterprise software (Boillat & Legner, 2013, p. 53)

As Tyrväinen and Selin (2011) remark, from the customer’s perspective SaaS can simply mean a way to outsource IT back-end management activities. From cash flow perspective, in SaaS model the end-customers’ costs are usually split into monthly fees which has been unusual in traditional on-premises-oriented markets (Schütz, Kude and Popp, 2013). Laatikainen & Luoma (2014) mention that subscription-based and usage-based pricing models are revenue-logics that are more common within SaaS business than within traditional on-premises business. Schütz, Kude and Popp (2013) recommend that because of the shorter sales cycles and smaller deal sizes, SaaS providers may need more salesforce compared to VARs providing on-premises offerings. Different pricing models used in SaaS deals compared to traditional on-premises business also influence in the customer relationships in long run (Laatikainen & Luoma, 2014). As SaaS providers often publish their prices openly through pricelists on their websites, their pricing may appear as more transparent and unified compared to the software providers with other kind of pricing models. SaaS providers utilize this differentiative factor in attracting customers. From end-customers’ point of view the pricing models used in SaaS business easily appears as

simpler compared to traditional software pricing as in SaaS offerings more components have been bundled under one list price. On the other hand, from product perspective more bundled offering also means more limited set of functions and less possibilities for tailoring (Laatikainen & Luoma, 2014). For example, CRM and ERP markets have welcomed SaaS newcomers led by Salesforce already more than a decade ago, but cloud-based CRM and ERP haven't still become supreme option. Many traditional vendors as SAP offer on-premises ERP software but they have had it optimized for web access to meet today's business needs already years ago (Boillat & Legner, 2013). Finally, Boillat and Legner (2013) present that the dispersion of total costs generated by the ongoing usage of the software is much stronger with SaaS than with on-premises software. With on-premises, the maintenance fees account of around 20% of the initial license prices usually whereas in SaaS there can be multiple hundreds of percent difference in the monthly fees between two SaaS solutions designed for the same purpose mainly because of their functional differences.

As SaaS is an ongoing service with repeating expenditures for the end-customer, the end-customer easily expects to get an incremental value over time as return. Also, the model often allows them to end the subscription as soon as they stop using the service as business as usual. This reaction causes a challenge and a requirement for an individual SaaS provider to frequently develop the service and increase the value creation to keep the clients satisfied with the subscription. Additionally, because switching costs are lower with SaaS purchases than with the on-premises-based software projects that have been acquired through one-time purchase, the SaaS customer have a lower threshold to try out competing services and products. To overcome these challenges in a profitable way the SaaS company must consider carefully how much to allocate resources on value-adding innovations and enhancements to keep the existing customers attracted to the service (Aaen & Gjerløff, 2015). Boillat and Legner (2013) for example suggests that even though the core functionality in SaaS is more restricted than in on-premises software usually, SaaS framework may provide extensions as integrated analytics, in-memory technologies and social media integrations that more barely exists with on-premises solutions. Also, enablement of mobile access and mobile application utilization may be an epochal factor in advantage of SaaS (Boillat & Legner, 2013).

Schütz, Kude and Popp (2013) also point out that in short-term the competition in SaaS markets may be less fierce than in traditional enterprise software markets but it is estimated to increase in long-term. To success in these markets the software providers

must meet new requirements concerning for example financial liquidity and domain expertise. It is also important to understand that cloud background alone might not be a key success factor in new kind of hybrid software ecosystems but, instead, traditional on-premises software providers who have already been focusing on market niches might have advantage during the ecosystem transition. Because of this, software vendors should focus on enabling their existing on-premises partners with niche expertise instead of only recruiting new SaaS partners into the ecosystem because of their background related to cloud computing. Software providers, on the other hand, should differentiate in service level to gain advantage against competitors who target to the same niches especially in SaaS markets where the products are more standardized and, hence, differentiation in product level is more difficult (Schütz, Kude and Popp, 2013). Holmström Olsson and Bosch (2014) found out that software providers also face critical challenges in monitoring end-to-end services when they are moving from traditional transactional business to relationship-oriented models.

While SaaS is a new attractive option for software providers mainly because of cost-efficiency reasons it can also be a tempting way to tap into untouched market segments. For example, small enterprises who do not have enough resources to acquire tailored software solutions or invest on large IT projects that carry high one-time purchasing costs have now more affordable access on different kind of software solutions.

3 Methodology

3.1 Research methodology

The research methodology in the empirical research consists of qualitative methods. Process started by analyzing the target market and potential focus group in there. It is more carefully presented in the section 3.2.1. After the analysis, the list of potential case companies was created. The thresholds for the potential case companies are presented in the section 3.2.2. Contacting the relevant executives in the companies that are suitable for the study led to six positive responses. Those six software business professionals were interviewed individually. The interviews can be defined as semi-structured. The structure of the interviews is presented in the section 3.3.

Qualitative methods suited to the study best as the required information was highly strategic and ambiguous and, thus, any structured quantitative data to answer on the research questions would hardly have been available. Many topics covered in the study were very multilayered and identifying the reasoning and drivers behind decision making required personal interaction through the interviews. Qualitative methods supported the structure and the goals of the study very well.

3.2 Research process and data gathering

3.2.1 Mapping the business analytics software markets in Finland

The first part of the empirical research was to map the market of potential case companies out for the research. A few internet sources as a Finnish commercial online media, IteWiki (2019), and software vendors' as IBM's Business Partner Locator website (2019) helped form a pervasive, though partly debatable perception of the IT software market in Finland and categorize the groups of stakeholders inside it based on the software vendor representations and software category expertise that each of them carries. In addition, for example Yrjönkoski, Helander, and Jaakkola (2016) studied the software markets in Finland focusing on the timeline from 2005 to 2015. The authors used the annual Finnish Software Industry Survey reports as their main sources which provide an extensive overview on the market changes over the period.

For this study, I decided to limit the group of potential case companies with a few thresholds to ensure the reliability and repeatability of the research. First, the company must provide enterprise data analytics / business intelligence software. Second, Finland

must be or must have been their major market area in the first place. And, third, the company size must be either small or medium. In addition, the goal was to have at least half of the case companies openly representing one or more software ecosystems orchestrated by a large multinational software vendor. This was achieved distinctly as five out of six companies categorized themselves as a business partner of one or several multinational software vendors.

Also, one goal was to gather different perspectives concerning the commonly known business models in enterprise software markets. Hence, the target group had to include representatives of companies that have done the shift from on-premises offerings to SaaS as well as those who have not and, also, companies that provide fully tailored software as well as those that focus on providing packaged software and/or productized services. So, companies carrying both business model types mentioned above as well as combinations of them were considered equally as potential case companies for the study.

IteWiki provides information of 1701 IT companies (status on 21.2.2019). By filtering out those with analytics expertise the website provides the information of 207 (12,1%) companies. 78 of them (37,7%) represent one or more of the technologies provided by the large vendors listed above.

- 72 represent Microsoft (34,8% of the IT companies with “analytics expertise”)
- 33 represent IBM (15,9%)
- 28 represent Oracle (13,5%)
- 12 represent Salesforce (5,8%)
- Out of these four vendors, 13 represent Microsoft and 3 IBM exclusively. Other 56 companies represent at least two of them. 7 is told to represent all four.
- 103 companies out of 207 (49,8%) with “analytics expertise” have also “SaaS / Cloud services” listed as a field of expertise. 47 of them represent at least one of the four vendors used for this exercise.

Nevertheless, there is some major limitations in the available information. First, there is no reliable and functional way to validate which technologies an individual company uses in its analytics offering before contacting the companies. Even if the company was stated to represents every vendor’s software or technology through their products and services in a public website run by a third party, they may not utilize any of them in their analytics offerings which is the field that the empirical part of this study focuses on. Also, it is not transparent what are the requirements of having an expertise or technology representation

listed under a company on ItWiki website. For example, only 15 of the 33 companies with “IBM representation” in ItWiki can also be found with IBM’s Business Partner Locator with the keyword “analytics” (status on 21.2.2019). Hence, from academic perspective this information concerning analytics software markets in Finland should not be found objective and fully reliable per se but, instead, it should be used only as a directional proposition for the preparation of research as it is in the case of this study. Therefore, every prospected target company’s website was carefully reviewed before validating one as a potential case company and contacting its executives.

3.2.2 Selecting and contacting the interviewee candidates

The first companies to contact with an interview request were those who clearly displayed on their company website whether they provide packaged software, software development and/or productized services, for example through SaaS model. Also, the first selected companies clearly communicated on their website which vendors and software they represent. In addition, I carefully chose a list of companies so that as many large multinational vendors as possible would be covered in the research.

Based on the types of business models and software provided by the first target companies and vendors they represented, the later interview requests were re-considered so that the ideal scenario to get companies with different business models and vendor relationships included in the study remains possible. As soon as the potential companies meeting the desired elements of offering types and vendor relationships were found, their market area (whether they actively operate in Finland or not) was validated. Fortunately, all companies that met the other requirements had an office in Finland – usually in Helsinki but in a few cases in at least one of the 10 biggest cities in the country. Next task was to find out who would be the potential representative of a company to interview. Vice Presidents, CEOs and Sales Leaders were the most common titles that the persons contacted carried but there were also a few executives who were designated to lead for example business ecosystems, business development or strategy and, hence, fitted as well in the study. All in all, 14 people in 12 companies were contacted which led to six positive responses. The remaining eight did not respond at all. Those six were the main source in the empirical part of the study.

3.2.3 Structure of the interviews

Four out of six interviews were done face-to-face, one in Skype and one over phone. The shortest interview lasted 30 minutes whereas the longest one over an hour. An average duration of the interviews was around 40 minutes excluding the introduction of myself and the goals and topic of the thesis. All interviews were done between March 2019 and May 2019. All but one of the interviews were recorded and transcribed afterwards. The interviews were done in Finnish, so the citations presented in the section 4 are translated from the original responses.

The interviews done for the study can be defined as semi-structured. One single question frame was used for every interview and it is presented on the table 4. Nonetheless, most questions asked in the interviews were generated on the fly based on the case companies' characteristics, earlier responses and new aspects that were highlighted in previous interviews. Hence, the question frame was closer to a crib sheet than a survey, and it ensured that all major themes and topics would be covered. Depending on a schedule of each interview additional open questions were asked in the end of the interviews when possible. For example, "what would be the most remarkable change in the enterprise software industry that you predict to occur in the next five years?" was a question not included in the question framed but which was asked from several interviewees.

Table 4: Question frame for the research interviews

The business models, industries and networks	1. What business models does your company utilize and how do they represent enterprise software industry?
	2. Do you offer packaged software and/or tailored software development and is the software distributed through cloud or on-premises model?
	3. What are the components in the software and service selection that your company offers?
	4. Does your company participate actively in one or more software ecosystems and how would you define the company's roles there?
Differentiative factors in the enterprise software markets	5. Do you focus on certain type of clients or projects? Are there specific thresholds that narrow your market scope?
	6. How does the company differentiate from competitors operating in the same markets?
Drivers that steer the business models and the decisions related to them	7. How do stakeholders and actions in the software ecosystems influence in the business models of your company and have their impact changed in recent years?
	8. How have market and industry-level trends as changing buying behavior or cloud computing driven your company's business decisions?
	9. What will be the most important factors that drive the transformation in your business models in the next five years?

	10. What kind of new partnerships and ecosystems your company will most likely adapt to in near future?
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Each interview started by introducing the topic of the study which then was followed by an interviewee's short introduction of their company. Even though the case companies and their unique characteristics are not revealed in the study, understanding each company's business and mission was a crucial task in order to reach a fruitful discussion and to select the right questions for the tightly scheduled interview.

4 Empirical research

The empirical research of this study focused on the enterprise software markets in Finland and more precisely on business analytics software providers there. As presented in the section 3, six high-level executives representing six Finnish software companies that provide analytics software, software development and/or services were interviewed. These six companies are called *case companies* in this paper. The aim was to get their point of view on the topics concerned through my research questions and the academic literature used for the study. The selected main research questions were:

1. What roles and business models do software providers have in the enterprise software markets?
2. What purposes do software ecosystems have for the software providers and how have and will the purposes change over time?
3. How different factors drive software providers' business model decisions and the transformation on an industry-level?

While the interviewees had unanimous opinions on some topics, several interesting differences were also brought up for example concerning how the companies act within their ecosystems and whether they see the concentration on specific technologies as a strength or a threat. Also, newer business models as SaaS clearly align in the companies' strategy and scope very differently even though most accepted the predictions related to the evolving industry-level trends toward services productization in the enterprise software markets. In the following sections, the outcomes of the empirical research are presented.

4.1 Software providers' current roles and business models in the markets

Most of the case companies described them as consulting companies above all. One defined itself as a software tailor that provides consulting in addition to its software development services. All case companies carry know-how, services and products that are tightly linked to information management covering for example data analytics, AI and/or Business Intelligence (BI) solutions and all but one of them highlighted the level of expertise in at least one multinational software vendor's technologies and analytics tool. As mentioned, one of the companies mainly provides tailored software development and,

hence, only utilize the technology provided by multinational vendors in software development processes. Hence, they are a client instead of a business partner for the vendor. While all companies are aiming for growth, two companies described internationalizing as another clear goal whereas two of them did not show any interest in expanding their business abroad currently or near future. The remaining two did not specify whether internationalizing is or may be a part of their mission and strategy now or in future.

Only one of the case companies did not practice full client-oriented software development (in other words software tailoring) at all. Also, all but one of the case companies provide standard software that is not developed by them or utilize that kind of software as a part of their comprehensive solutions designed for individual clients. All but one of the companies belong in one or more multinational software vendors' software ecosystems and utilize their technologies in own business.

One of the main goals of the study was to identify the current (and future position) of productized software services as SaaS in the enterprise software markets. Interestingly, five out of six case companies had at least started to develop and productize their solutions to meet the market needs at some point. One of them develops add-ons on top of their ecosystem vendors' solutions but does not distribute them through cloud. Instead, they distribute them as standardized software components within their vendor's on-premises software solutions. In fact, all case companies that do belong in a software ecosystem build add-ons on top of their vendors' solutions; four out of five companies developing add-ons mainly utilize a cloud environment and distribute them through the SaaS model. It was also highlighted in one interview that building add-ons or other standard software components enable company to finish larger software development projects faster as everything doesn't need to be developed from the scratch repeatedly. However, clients' needs in enterprise software markets vary a lot which often complicate the reutilization of prebuilt software components.

Overall, SaaS models aligns in the companies' business models in quite various ways. Two of the companies started their business by developing SaaS solutions but both soon moved to consulting business and abandoned their SaaS strategies – at least for now.

“Our company was first found to develop own software but then our partners realized that these products won't success yet as organizations' level of understanding in data analytics and the data they have is too weak.” (Interviewee #1)

“We started as a product company and had a vision to create an enterprise SaaS solution. We developed two SaaS solutions until minimum viable product phase. But during that 1,5 years long period some of our people provided consulting services too, so on the side of our software development there grew well-working consulting business which provides tailored solutions, both software and data analytics, to clients. Then we had to decide – whether to invest heavily on SaaS or stay as a consulting house as both can’t be done reasonably. So, we decided not to continue SaaS development and, instead, to focus on the well-growing consulting business”. (Interviewee #3)

One of the companies, instead, started as a reseller in software ecosystem but later started to develop own standard software to the markets. However, less than half of the solutions they developed in past four to five years still exists in the selection.

“Around four years ago when we reflected where could we be in 2020, we made a strategic decision to productize some of our solution that had already met the demand of several clients. And so we did – we ended up having five productized solutions. ... We invested a lot on those but if we look at our current situation, only two of them actually exist anymore”. (Interviewee #2).

Thus, half of the case companies have abandoned most SaaS solutions (that are not add-ons) they have fully or partly developed in the past few years. Two companies still strongly rely on their current SaaS solutions and actively develop new ones for the market needs. Also, one company would have started to develop their own SaaS solutions already from the beginning, but they did not have enough resources to invest at that time whereas one interviewee admitted that one reason for not to develop SaaS solutions is that there simply haven’t been ideas that sound good enough to invest heavily on.

“We would have developed our own products from the beginning but couldn’t afford that back then. Around two years ago we updated our strategy; we decided to focus on having products around different solution areas constantly which we mainly provide through cloud as SaaS.” (Interviewee #4)

“Honestly speaking, we haven’t discovered any supremely brilliant ideas yet.” (Interviewee #5)

The company that provides software development but not any standard software pointed out that they could and have several times considered to develop standard software to the markets but for the small company it would not be wise to allocate resources as much as is needed to success with that business model. Finally, a lot of the standard software

developed by the case companies that was not built as add-ons were each focusing on one specific industry. However, in company-level none of the case companies focus only on one or a few specific industries on a strategic level. This aligns well with the findings of Schief, Pussep, and Buxmann (2013) whereby most software companies do not limit their business approaches based on a few carefully selected industries. Still, several interviewees admit that their expertise, history and developed solutions easily steer them to get more clients on one or few industries over others.

4.2 Software ecosystems today and in the future

As mentioned, five out six companies recognize themselves as a participant in at least one software ecosystem orchestrated by a multinational software vendor. Microsoft was the most common vendor among the case companies but IBM, Tableau, SAP and a few smaller ones were also mentioned. Additionally, more than one company had either already partnered with AWS or were up to start the partnership in the near future. When asked about their role in the ecosystems, most companies defined themselves as integrators more than any other typical roles. One stated that they are closer to reseller than other roles, and several companies pointed out that they are also capable to reseller vendors' solutions and, hence, operate as value-added resellers when needed. Reselling software licenses is not remarkable business for those companies though and, thus, they do not focus on that in their daily business. Nevertheless, in those companies who operate in more than one ecosystem the role also often differs between the selected ecosystems and each ecosystem and vendor usually serves different business units. Two of the companies define themselves also as Cloud Service Providers (CSP) which overlaps with the more traditional integrator and ISV roles.

When discussing software vendors and the case companies' relationships with them in the interviews, many different perspectives were brought up. The aspect that was the most mutual among the interviewees is the role of incentive programs set up by vendors. No one considered the financial incentives as a highly remarkable revenue source for the business or as something that would strongly drive the company's strategic business decisions to any direction.

“Every time a new incentive program is released, we go through it and consider whether there is potential for additional revenue. But we don't do any changes because of them.” (Interviewee #2 on the question 7)

A few stated that the incentives are just a pleasant bonus when earned and for example one pointed out that if a vendor had set more attractive incentives for reselling solutions through SaaS model which is a clear direction that vendor is trying to drive their partners to, it would potentially gain more attention from the case company.

“Our vendor doesn’t currently drive us to SaaS model by using financial incentives. If they did, it could change our interests.” (Interviewee #3)

Nonetheless, one case company admitted that for a small agile player it is easy to modify business models to meet the requirements of the incentive programs even if the benefits were not that great and, hence, they follow constantly the changes in those programs.

“They (incentive programs) do influence on the business models and since we are a small and agile player, we can easily adapt on them without several years of exercises.” (Interviewee #4 on the question 7)

As the reselling approach did not play a significant role among the case companies nor did value-added distributors that operate as middlemen between a vendor and its business partners generally as presented in the section 2.2.3. Only one of the case companies highlighted that they have a distributor involved in their business cases as a rule.

“The three of us (the case company, the vendor and the VAD) always plan together. The partnerships also support our sales; we get leads from both, the vendor and the VAD.” (Interviewee #3)

Interestingly, at least one of the vendors that were mentioned in the study does not utilize the distributor-model in their Finnish ecosystem at all.

There seems to be an convergent policy among the vendors where those who have local presence of their own in Finland want to focus on the biggest clients by themselves and utilize the ecosystems to cover the small and medium-sized clients whereas those vendors who provide software only through the partners in Finland do not steer their partners to focus on any specific client or client groups based on their size. Nonetheless, even the vendors who aims to take the ownerships of the biggest clients in Finland by themselves do welcome the partners to provide value-added services to those enterprises too. Thus, the proposed model where vendors utilize ecosystem to create value-added services and add-on solutions on top of their offerings seems to occur strongly in Finland.

“It can be generally stated that these giants (multinational vendors) are not the best in providing solutions to a client’s specific need. Instead, they have the platforms and the other elements (as strengths).” (Interviewee #4)

The case companies also verified that the vendors actively drive their partners to develop add-ons and are open to provide those in the marketplaces managed by the vendor. Interestingly, one interviewee's point of view was that marketplace models haven't achieved a strong position in Finland yet but might already work well in other countries, for instance in The United States.

"Vendors want their business partners to develop packaged solutions on top their own products. And then they have marketplaces where you can sell those solutions. ... Has it ever brought us any deals? – No. So, we don't invest on that. Could it work? – I honestly can't tell. I believe that it doesn't work in Finland, but it may be a different story elsewhere, for example in the United States." (Interviewee #2)

"App stores in smartphones have already indicated that people like the model and it is easy to browse what is available there. So, I believe that it is a suitable model for enterprise software markets too." (Interviewee #3)

Other ways of how vendors' actions affect partners business than incentives programs are new software releases, updates, agreements, business models and communication. Based on the interviewees, most vendors support the partners' transition toward SaaS model in different ways even if there weren't incentives programs yet to accelerate the transition. Those vendors who do not provide their analytics solutions through SaaS are planning to release SaaS alternatives soon. Also, the vendors' often support so-called hybrid solutions where both public cloud environment and clients' private environment (cloud or on-premises) are both utilized. The general approach seems to be that the software is available as both, cloud-based SaaS and more traditional on-premises solutions. Nonetheless, one case company highlighted that even though their vendor's desire is that partners prefer SaaS, the potential revenue for the partner through a software implementation process is better in more traditional model and, hence, the partner prefers cases where on-premises model is preferred from the client's side too. The interviewee explained that the reason for the potential revenue difference bases on the risk enabled by smaller switching-costs in SaaS model; after deployment the client can easily switch to another software provider that offers cheaper licenses and, hence, the original provider may not have even covered the costs that the implementation process has caused to them not to mention the long-standing relationships they had aimed for. The industry-level trend toward the growing popularity of SaaS model, add-ons and cloud computing generally was clearly the most visible change that has influenced in past few years and is still influencing on the ecosystems from the case companies' point of view. Instead, the

roles in ecosystems were generally predicted to transform only slightly in the future and the structure of an ecosystem even less. One interviewee believed that value-added distributors' roles will change somehow from what they are today, though. The interviewees' perspective was also that the ecosystem structures and roles have been very stable in past years.

"I wouldn't say that there have been any remarkable changes inside the ecosystem. If we think about the field of data analytics, I would say that there has been a slight movement backwards. Earlier there was a lot of programming-based practices inside organizations but then a lot of good (standard) software came to the markets and the self-service model started to spread. But now because of AI the markets are on their way back to the condition where a programmer provides most things". (Interviewee #1 on the question 7)

Few interviewees believe that the vendors' global businesses will become more platform-centric and more often their software won't be as restricted on their own cloud platforms only as they have been now.

When discussing the communication and co-operation between software providers and their vendors, one of the interviewees highlighted that the partners are constantly providing requests and suggestions to their vendors but the reality in most scenarios seems to be a master-servant-relationship between a vendor and a partner. Vendors make their decisions independently and partners' authority to influence on them is minimal.

"Even though this is called partnership it is kind of a master-servant relationship as we operate based on partner agreement in the resales business. So, we try to utilize the good things that the vendor releases and adapt to the changes." (Interviewee #1 on the question 4)

Nonetheless, the communication between a vendor and a partner organization was defined as two-way, constant and confidential. The case companies see it extremely important for the vendor to earn the trust of their partner in order to maintain well-functioning ecosystem. Another aspect that the vendors support is their partners' internationalizing goals. For those companies that already operate internationally the ecosystems' purpose has emphasized when expanding abroad above all. Finding relevant business partners in the new foreign markets was emphasized as one of the most important tasks when expanding abroad. Generally, the interviewees pointed out that there is more co-operation between software providers inside an ecosystem today than earlier, but the software

providers rarely provide other than the vendor's solutions to their clients. Only one interviewee told that they have partnered with other software providers who now resell their solutions and services. This way the company can reach to wider international markets. Others agreed that this kind of cross-resales model could become more popular in future markets but did not predict it to become business as usual in their own business anytime soon. Yet, one interviewee stated that it makes sense to resell a single solution or an add-on that another company has developed than develop one from the scratch by their own when only one individual client has a specific need for it.

"In one case one of our competitors had built a module that our client needed. So, we rather license it from them than invest on developing it on our own. So, I believe that there will more case like that. When the solutions are built with modules like with Lego bricks, it must be considered case by case where to get that required brick." (Interviewee #3 on the question 9)

Finally, when asked about potential new partnerships in the future, some interviewees predicted that their partner network will remain the same whereas some were very confident that new partnerships will be tied.

"IoT and common perceptions on disruptive businesses will develop. Maybe not yet next year but after that. And it of course means that new players will enter the markets – either start-ups or grown-ups which have excellent products that fit into our expertise. So, there will be new partnerships for sure and, again, some old ones will drop off." (Interviewee #2 on the question 10).

"I'm not sure if it's because of SaaS but definitely because of analytics and AI hype. Many kinds of organizations want to ally." (Interviewee #4 on the question 10)

4.3 Drivers behind business model and ecosystem related decisions

When started to discuss the drivers behind selected business models and business decision with the interviewees, they all emphasized the client-oriented perspective of their business. However, as the enterprise software industry is a rapidly shifting one, other factors as technological development and trends came up as well. Also, as every company's background and internal features shape their perspectives and influence on the decisions

naturally. This section has been divided into three sub-sections: client-oriented drivers, technology-oriented drivers and internal drivers.

4.3.1 Client-centric drivers

Probably the most undisputed client-based driver that have caused requirements for software providers to update their business models is the organizations' attitude toward cloud environments that has changed significantly over past years. Today, clients have more and more often precise cloud strategies and, also, the doubts concerning cloud computing and for example the IT security threats in it have decreased. The interviewees presented that those clients who still prefer on-premises infrastructure usually base their opinions on the security issues on cloud as well as on GDPR and even incorrect perceptions on its requirements.

“The transformation to the cloud has been in discussions and even in public media for so long that it doesn't really provoke concerns anymore. ... Some companies or their employees have an assumption that their data can't be located abroad which it usually not even true.” (Interviewee #3 on the question 8)

In fact, nearly all clients seem to prefer the utilization of cloud environment over on-premises alternatives today.

“It is visible that SaaS solutions are more tempting for the clients. Many of our clients have started to shift their strategy on cloud and more toward the model where the software provider provides everything, and the client's own IT department does not need to admin the software”. (Interviewee #1)

“Clients understand the benefits of cloud much better than three years ago. ... In 90% of the (tailored software development) cases there is a cloud platform.” (Interviewee #2 on the question 2)

Another potential reason for some clients to prefer on-premises model is the investments already made on the on-premises IT infrastructure. Decision makers may feel that since the investments have already been made, the benefits of the infrastructure should be maximized even if it wouldn't cause better results than the cloud-based alternatives. The investments on one vendor's infrastructure are great signal for software providers that the client is most likely interested in that vendor's other technology and software too. As organization have become more open to cloud environment and SaaS solutions, the size of many software providers' projects has diminished. Tailored software development

projects, instead, are usually larger which makes them more tempting for software providers from revenue perspective.

“Two out of three in our revenue is generated by the tailored software development business. With data analytics, cloud services et cetera the projects are very small and short.” (Interviewee #3 on the question 2)

All in all, even though the trend toward productized SaaS solutions is very visible, the interviewees were very unanimous that the tailored software development markets will keep on growing as well. One remarkable reason at least in Finland seems to be the lack of skilled professionals.

“There is serious lack of programmers in the markets. And there is a lot of work to be done as well. So, in future the amount of software development won’t decrease anyway.” (Interviewee #3)

“Programming won’t decrease in this world, rather vice versa. There is a lot of businesses where it is completely justified that the software should be fully tailored.” (Interviewee #4)

In addition, one interviewee told that based on their own market studies, small and middle-sized organizations can be roughly divided in two groups, those who are open to digitalization and cloud computing and those who resist them. Usually those who resist are not utilizing any cloud-based SaaS solution in their business. The case companies also stated that the interest in data-driven business opportunities and the demand on analytics solutions have increased in a past few years. One interviewee exposed that a remarkable change in markets happened in 2016 when the AI and data science became trends in several industries. At the same time organizations started to invest heavily on the training of their personnel in order to gain stronger understanding in data-driven business opportunities and practices.

Another remarkable change in markets that has caused requirements for software providers is related to modernizing organization cultures and buying behavior. Every interviewee emphasized that today they mostly deal with the business side of the clients and IT departments have only a supportive role in the discussion whereas earlier it was almost a norm that IT made the final decisions when acquiring software. Hence, it is relevant to predict that the role of separated IT departments will decrease or at least shift in future. As this transition is a slow ongoing process, it causes a dilemma in many organizations; IT often tries to hold their decision-making role inside the client’s

organization and fight for the resources internally. This scenario is a never a pleasant situation for a software provider either.

“In some organizations there is both, a CDO (Chief Digital Officer) and an IT Executive and in the worst scenario they fight against each other for the recourses and the power to decide what acquisitions will be made. It’s not a fun situation for the software provider either.” (Interviewee #3)

Many interviewees also blamed IT departments for leaning to old-fashioned structures and arguments and, thus, slowing down the organizational transition from on-premises IT infrastructures to cloud. As presented in the academic literature already (Wenzel, 2014), IT departments often end up becoming bottlenecks in software purchasing projects from interviewees’ point of view too.

“It’s sad to say but IT is often a stopper in development. They see enormous risks maybe because they have used to focus on the infrastructure and on-premises models. Partly they are afraid of information security but partly it is about their decreasing authority. They want to possess the controlling role inside their organizations.” (Interviewee #1)

“Subscription-based models are usually agile and fast and, hence, they capture markets widely. But there are still large companies with big resourced organizations that have clear strategies and acquire infrastructure and licenses and require help developing those operations.” (Interviewee #4)

Additionally, organizations today aim to become more agile when making software acquisitions and deployments. Several interviewees brought up that co-development between the software provider and the client, proofs of concept (PoC) and an experiment-oriented organization cultures are business as usual which they were not a few years back.

“It is very important for our business to be able to operate quickly, easily and effortlessly and test the software without the support of IT. ... So, we can basically validate the benefit for the client before they have even made the purchasing decision. It decreases the risk for the client but also the risk for us”. (Interviewee #1 on the question 6)

“Today the agile way of doing is more a norm than an exception. ... We develop while we plan while we test while we implement. It is related on how you increase the capacity. And the cloud environment supports that.” (Interviewee #2)

However, two interviewees pointed out that even if this was an obvious goal for a client organization, the culture hasn’t usually changed enough to make as big difference in the

projects as the clients believe it has in the reality. Also, one interviewee notified that especially in analytics context the decision-makers in client organizations have often either technology or mathematic background instead of business background which then easily leads to the gap where the people making decisions concerning analytics solutions and data-driven management do not understand the actual business needs in their company well enough. In these cases, lot of software development and acquisition are made but the achieved benefits on business level stay low. And, on the other hand, in many cases those who make the decisions on the business level do not understand the potential value of data analytics and, hence, act resistantly toward analytics solutions and practices as well as the support from analytics experts. Generally speaking, software providers feel that have had the readiness for agile ways of working for much longer than the clients but haven't had change to utilize that until very recently as both sides needs to accept the agile procedures and invest on that to make it function in a desired way.

4.3.2 Technology-centric drivers

In enterprise software industry, there is constantly new technologies, platforms and software entering the markets and the old ones being updated. While the case companies continuously discover new possibilities enabled by technological changes in markets, they still must be very careful when making the decisions of adopting new technologies as it always requires serious investments. Especially the lack of expertise in markets often block the opportunity to become a relevant software provider on new technology areas. One interviewee pointed out that especially in times when a whole industry begins to move under a new technology or on a new platform the software provider must rethink their capabilities and consider changes in business models and technology selections.

The insights gained from the interviews concerning the competition in enterprise software and especially analytics markets indicated somewhat incoherent opinions. While some interviewees described the number of analytics solution and service providers operating in Finland quite high, one point of view was that there are not many analytics providers who truly operate within the business side of clients instead of through the technology-oriented approach. Still, nearly every interviewee perceived that specialization in specific technologies and ways of working are the keys to success in the competition. This reason is also the basis for the decisions of only participating in a few carefully selected ecosystems. Another external driver that support software providers' technology selections is reports and analysis published by relevant global stakeholders as Gartner.

The market growth of AI and machine learning were named most often as the strongest trend that will shape enterprise software markets in the future. However, most interviewees were somewhat sceptic concerning the true business potential of AI-driven solutions today. They perceived it more as a hype caused by marketing actions than as truly disrupting force. Also, the definition of AI seems to be twisted in business context as in many cases the solutions that are perceived as something that is tightly related to the concept of AI are either utilizing predictive analytics or robotic process automation (RPA) instead of machine learning. Still, many interviewees believe that real AI-driven solutions will become more relevant for all businesses over some time and it will cause changes, challenges and opportunities in analytics software markets. Also, as discussed in academic context, the case companies see the growing markets of SaaS solutions already visible among Finnish clients. Organizations are fast becoming more ready for self-service software deployment and utilization which means that the software purchasing becomes more agile and requires less support and consulting from the software provider.

“We want to move from IT-driven old-fashioned data analytics to self-service model where basically anyone can use it.” (Interviewee #1 on the question 6)

“It is on the horizon that over a few years consulting business will decrease. And the margins in it as well. There will be more standard cloud services instead. And the areas where larger margins are still available can be reached by developing own intellectual property (IP) – the assets on top of the vendor’s solutions. And that’s the direction where the vendors are driving their business partners to. ... For a company like us it would mean a comeback to the product business.” (Interviewee #3 on the question 9)

However, several interviewees highlighted that within analytics context the transformation toward standard software markets won’t be as straightforward process as with many other enterprise software. In fact, it is somewhat controversial whether the transition toward packaged solutions and self-service models will be a positive change for the clients of analytics providers at all. One company stated that most analytics that is included in today’s standard software solutions only measures the most obvious objects whereas with tailored analytics solutions it is possible to make findings that have not even been recognized as the objects worth measuring before. Many challenges can also be predicted when the markets of larger software entities as ERP are shifting from customization-centric approach toward the era of standard solutions.

“ERP is in the core of business processes so the transformation will take some time. And it’s not only a technical challenge but cultural too; how organizations want to execute the deployment and so on. Even the large vendors have a lot of work to do until their CRM and ERP software can be deployed with self-service model”. (Interviewee #3)

Hence, based on the interviewees and academic discussion it is still extremely difficult to predict whether the software consulting markets will be growing or shrinking in the future, especially within analytics context. On the other hand, the interviewees pointed out that the complexity of AI technologies will decelerate the generalizing of self-service models in that context and, hence, the demand for consulting will grow at least within deployment of AI-driven solutions and software.

“When it comes to machine learning, business world is still searching for the software areas. And they are very much related on what data do organizations have and what are the things that the organizations want to predict. There is already some standard software in the markets, but broadly the cases are client-specific and custom-made.” (Interviewee #2)

While some interviewees believe that the total demand of software consulting will decrease, one interviewee’s perspective was that at least among their clients it will increase and, hence, they should start to provide more expertise and consulting on the business level on top of their software development services.

“In AI business, global service providers develop their solutions so fast that tailored software development (in that area) will start to decrease, and consulting will increase explosively. Companies must adopt roles as data scientist and AI trainer.” (Interviewee #5 on the question 9)

4.3.3 Internal drivers

Even though the case companies highlighted their client-oriented business models and the enterprise software industry is commonly defined as strongly ecosystem-oriented industry as presented in the section 2.2.1., each company’s unique background, culture and other internal factors influence on the business decisions – especially in small organizations with very limited resources. The case companies told very interesting yet different stories of how they ended up operating with the current business models. Majority of the case companies had made their major technology decisions based on the background of

founders who either had already worked in one software ecosystem or were otherwise more familiar with certain technologies over others.

“Three of our founders used to work for our current vendor before setting up this company. We know a lot of people there and we believe in the strategy they have.”

(Interviewee #3)

One of the companies was founded to develop their own SaaS solutions but soon decided to move on consulting and reselling business. The turning point in their business model transition was the point when the founders discovered a vendor which provided technology that they perceived to suit best to the market needs. Similarly, in some case companies even if the first technology/ecosystem decisions were made based on historical background, the latter ecosystem entries based more on the technological advantages that would complement a software provider's existing selection and business models. This was concretized for example when some of the case companies decided to adapt AWS technologies in their business. Nonetheless, one of the interviewees told that they would be open to expand even more to different ecosystems and technologies, but it is hard to find and hire experts on those areas and it would be too long and costly process to train new ones. The interviewee reminded that level of expertise within the new technology must be very high until it can be utilized credibly and bring value to the clients. Thus, the company has done their expansions mainly by acquiring other companies or their assets. After all, more common strategy among software providers seems to be focusing only on one or very few technology families and ecosystems.

“We don't believe in the model where we sell everything and just have a bag where we pull products and ask, ‘is this good?’... We know our products thoroughly and we can do anything we want with them. That expertise brings us further in the competition” (Interviewee #1 on the questions 5 and 6)

“For a small company as us, it would be difficult to have a good level of know-how in more than one ecosystem. So, in ecosystem context we rely on one vendor. And it benefits us a lot; we get materials to support our marketing and sales, both business and technical trainings and so on. But in tailored software development business we utilize other technologies too.” (Interviewee #3 on the questions 4 and 5)

Concentrating on small number of ecosystems helps company become convincing concerning the technical side of software and well-known inside the ecosystem which strengthens the partner relationships there. In addition, utilizing one platform in software

development eases the reutilization of software components which was discussed earlier in the section 2.2.

Finally, the interviewees presented different but very reasonable arguments to rationalize their business model decisions. One of the companies who started their journey by developing own SaaS solutions explained that the potential scalability of productized services was the main reason for that business model in the first place.

“In the first place, ‘the hockey stick’ was the goal we wanted to reach; the exponential scalability of sales through digital channels. We wanted to be a SaaS company because once you succeed on that the business potential is huge. But, of course, very few of those who start it finally succeed. There is a very brutal and intense competition in that business”. (Interviewee #3)

Other case companies still providing SaaS solutions agreed the high potential of scalability in that business. One added that the scalability enables internationalization; the company can provide productized services anywhere in the world. If they would try to do the same with consulting business and by scaling the pairs of hands it would take decades. But, instead, many times they reach new clients with the SaaS solutions and then can include the consulting services into those cases as well.

“We first wanted to be a European leader and later updated our vision to become a global leader. And the only way to complete that is to find the business models that scale. And SaaS does. If we practiced only consulting, we would need to forget the global goals or decide that we will conquer this globe in the next 60 years.” (Interviewee #4)

5 Discussion

The scope of this study and the research questions aimed to discover the greatest drivers and trends that shape enterprise software providers remarkable business model decisions. The study delved into the enterprise software markets carefully from business perspective. The framework was roughly divided into three major themes: 1) the business models and the types of software, 2) software ecosystems and 3) drivers behind decision making and industry-level trends. The methods used in the study were literature review and qualitative semi-structured interviews focusing on enterprise analytics software provider markets in Finland. On the following sections the key findings, limitations and the suggestions for future studies will be presented.

5.1 Findings

On this section, the findings to answer on each research question will be presented. Outcomes of the empirical research will be reflected on the academic literature that was presented on the section 3. Findings are patterns that both literature and the empirical research support, theories that academic discussion has brought up but were not agreed in the empirical research and themes that the academic discussion hasn't covered but which got notable attention in the empirical research.

5.1.1 Question 1: What roles and business models do software providers have in the enterprise software markets?

In the academic literature, software markets have been categorized from different angles. For examples, Pietsch (2013) has presented four types of IT (software) offerings: off-the-shelf (licenses), licenses with services, projects and, finally, system services and cloud computing. Software-related services include for instance training, installation, consulting and programming. In many cases, the business models in enterprise software markets consist of multiple elements of those presented above. Software solutions, on the other hand, can be roughly divided in two: tailor-made software based on an individual client's specific needs and standard software based on the market needs (Guvendiren, Brinkkemper and Jansen, 2014). As presented on the table 1 on section 2.1.1., these two types of software act very differently and rely on different strengths. While both types of software have strong position in the enterprise software markets, both the academic discussion and the empirical research have accepted the accelerating trend of business models shifting from tailored software toward standard software. However, software per se is an extremely broad term and includes an endless number of solution types. Hence, the theories and trends do not fit evenly on each market of different software solution types. For example, CRM and ERP solutions are usually so multilateral and large that they require more tailoring and more intense sales and deployment process than some other types of software solutions, for example BI reporting tools.

Different levels of tailoring or standardizing software solutions are not the only way to specify the business models in enterprise software markets. For instance, several different pricing models exist in the industry. Laatikainen and Luoma (2014) listed six most common revenue stream types that software providers utilize: monthly or annual subscription fees, advertising-based revenue, transaction-based revenue, premium based

revenue, revenue from implementation and maintenance services and, finally, software licensing. However, usually the software provider does not select the pricing model arbitrarily but, instead, based on the type of software solution. For example, monthly fees are used in subscription-based SaaS model mainly.

Since SaaS as a business model is constantly becoming more common in the software markets, the study concentrated on SaaS quite a lot. Simply, SaaS refers to both, a business model and a software delivery model, and it can be defined as “the delivery of multi-tenant, virtual, web-based and configurable application that is accessible through browser” (Laatikainen & Luoma, 2014). In the SaaS model the responsibility of owning, hosting and delivering the software moves from end-customers to the software provider. Thus, the requirements for the software provider are much different than in traditional on-premises-based business models. Boillat and Legner (2013) have brought the academic discussion around SaaS further and presented three sub-categories of SaaS solutions: enterprise SaaS, pure play SaaS and self-service SaaS. Although these terms were not used or discussed per se in the empirical research the results indicated that companies approach SaaS markets in different ways. For example, self-service model differs remarkably from many enterprise solutions that still require a lot of support for example in deployment. The empirical research indicated that many software providers at least plan to productize their solutions and distribute them through SaaS model but, interestingly, many have also abandoned them after some time of development. The most unambiguous reason seems to be that other business models as consulting leads to better and more secure revenue while developing and gaining market share for a SaaS solution requires heavy investments. Nonetheless, based on the empirical research SaaS is still a relevant model at least for those who aim to expand their business abroad. The academic literature used for the study did not provide any direct perspectives on this, though. Even more popular than productizing complete software services seems to be add-on development on top of software vendors’ solutions. In addition, software tailoring often belongs in software providers’ business models even though a company wouldn’t identify itself as software developer house in the first place.

Software ecosystems have been studied a lot in past two decades and there are some patterns that exist across most ecosystems. Nonetheless, the typical roles presented in the literature are rarely as black and white as the academic discussion indicates. The empirical research pointed out that for a software provider it is hard to categorize oneself under pre-defined roles today. The companies are eager to highlight their expertise, client-oriented

perceptive and the readiness to adjust into different roles based on clients' needs. Many software providers use several business models that serve clients differently and, thus, their role(s) can only be defined case by case instead of comprehensively on a company-level. Still, at least roles as an integrator, a cloud service provider and an independent software vendor do exist as such at least in analytics software markets in Finland. In academic literature, value-added resellers are presented to have remarkable representation in software markets, but the diminishment of license-oriented resales model have clearly shaped the industry and mitigated the resales-oriented roles.

5.1.2 Question 2: What purposes do software ecosystems have for the software providers and how have and will the purposes change over time?

For over a decade, an enterprise software industry has been highly ecosystem-centric. It means that very rarely enterprise software companies invest on software development, technology, marketing and sales alone by their own. Forming alliances and participating in a software ecosystem has brought so much value to the companies that it has become a norm in the industry. (Wnuk et al. 2014).

The concept of business ecosystems has existed in academic literature for two decades already and its sub-form, software ecosystem, nearly as long. The ecosystem-oriented approach has changes significantly software companies' strategies, investments and partnerships. The main goal of the ecosystems is to create greater total value than what its participants could generate when operating separately. Business ecosystems enable especially the expansion of niche solutions to wider markets. (Moore, 1996). Holmström Olsson and Bosch (2014) have described the software ecosystems as a commercial ecosystem that usually consists of a software platform provider (the vendor) and a community of external players that contribute with knowledge, content, goods, services, connections and behavior. Traditionally, a channel has been a remarkable model inside the ecosystem. It relies on the structure where the vendor provides technology and software which gets delivered and gains additional value through value-added distributors, resellers and/or integrators respectively until reaching the end-customer. Nonetheless, the traditional channel structure has started to shift toward more complex model where the relevance of value co-creation is increasing over resales business. The transition was strongly accepted in the empirical research. As was presented on the table 3 (Novelli, 2013, p. 40), cannibalization caused by the growth of digital sales channels may be one factor to explain it.

Holmström Olsson and Bosch (2014) have presented six key strengths that have enhanced the position of ecosystem-oriented approach. First, the approach increases the total value of the core offerings to the clients. Second, it increases the attractiveness of the solutions and stakeholders for the potential clients and users. Third, it reduces the total costs through shared maintenance costs. Fourth, it enhances the innovation capability. Fifth, it enables stronger collaboration between the software companies and reduces their total costs through shared innovation costs and, finally, it enables “platformizing” of functionalities developed by the participants. By participating in the ecosystem, the software companies can focus more on their internal differentiative factors and more easily outsource other operations and responsibilities. In a healthy ecosystem, the levels of productivity, robustness and niche creation are high. These three elements can be defined as follows. Productivity means that the ecosystem provides meaningful outputs constantly. Robustness means that the ecosystem is strong enough to survive market disruptions and niche creation means that the ecosystem generates solutions to untapped niche markets and organizations’ specific needs.

The software providers are on the core focus group of this study and they can be simply defined as software companies who are not software vendors and the orchestrators of the ecosystems nor value-added distributors. They may carry market roles as a value-added reseller, an integrator, an independent software vendor, a cloud service provider or a software tailor. For them, the benefits of participating in an ecosystem are the same as presented above but there are many others too on top of those. For example, value-added distributors business relies on providing training, technology-related and operative support and marketing development to the other stakeholders in the ecosystem, so through the ecosystem software providers get access on those benefits. For the software providers today, license-based resales and the vendors’ incentive programs supporting that is not as business as it used to be earlier. Instead, the software providers have accepted the model where they create add-on solutions on top of their vendors’ technology and software. This indicates that the value co-creation has already a strong position in the software ecosystem business at least in Finland. Some vendors also provide marketplaces where their business partners can market and deliver their solutions. However, the empirical research aroused questions whether this model works well in the Finnish markets yet. Anyway, the enterprise software markets are predicted to shift to the direction where individual software companies develop single components that together form the final solution for a client. The software solutions will be built more and more often like Lego structures and the

ecosystem reflects to a basket of Lego bricks and the developers who can build and provide the required bricks.

The vendors aim to steer their partners business models in other ways too. For example, those vendors who have local presence in Finland seems to be eager to cover the biggest Finnish clients by their own and drive their ecosystem partners to serve small and medium-sized businesses. However, they still accept the value co-creation activities as add-on solutions from their business partners to the client cases where they have the ownership. This, again, supports the idea of value co-creation being a core area of responsibility for the ecosystem. Finally, for the software providers the importance of ecosystem seems to increase when expanding the business abroad. In the empirical research, those companies who aim for internationalization highlighted the significance of partnerships when entering new markets.

5.1.3 Question 3: How different factors drive software providers' business model decisions and the transformation on an industry-level?

The evolution of software markets has gone from tailored software solutions to standard software and again to more service-oriented application as SaaS which is enabled by cloud computing technologies (Boillat & Legner, 2013). Nonetheless, none of these major categories of software types have vanished during the evolution. Software customization has still a strong position in the enterprise software markets and all standard software is not provided through SaaS model. The aim with this research questions was to identify the factors that drive or steer software providers decision between different business models and the combinations of them.

As presented under other research questions, several factors drive the development of SaaS business models in the markets. The empirical research accepts those findings and highlight that the perceptions in organization toward SaaS and cloud-computing generally have shifted significantly in the recent years. Nearly all clients prefer cloud over an on-premises software environment and have a written cloud strategy today. While SaaS model relieves clients from several responsibilities that they used to have, for SaaS providers it naturally means that have to they carry those responsibilities from now on (Schütz, Kude and Popp, 2013). Additionally, SaaS usually utilizes different pricing models and revenue streams that more traditional models and, hence, software providers must consider them as well when shifting to SaaS business or establishing one.

Even though the evolution on the industry-level is favoring cloud-based SaaS solutions and standard add-on software models, there are several reasons that still support both, tailored software solutions and traditional on-premises projects. First, all software solution types do not fit into the requirements of SaaS model evenly. For example, CRM and ERP solutions as well as tailored software are usually still provided as large on-premises projects and, hence, companies whose business relies on them can't simply shift to cloud-based service productizing arbitrarily and effortlessly. Those processes also require highly personnel-intensive sales and service approaches which must be considered in the companies providing them (Wenzel, 2014). Additionally, even if the company had the readiness to provide solutions through SaaS model the potential revenue for the software provider might be remarkably higher with the traditional model. Large projects bring remarkable revenue through high one-time costs, high number of priced working hours, implementation phase and potentially maintenance and other after-sales services. In SaaS model, one-time purchasing costs are low and as the shifting costs are low, software provider may not achieve high revenue from an individual client even in the long run. So, even if the demand for SaaS in the markets would be greater than the demand of traditional on-premises software model a software provider may prefer the second alternative for revenue reasons. Second, some clients still feel insecure about cloud-based software. Information security and GDPR regulations, for example, slow down the growth of cloud environments. And, third, sometimes earlier investments may be the main reason to support specific model or technology. If a company had recently acquired IT infrastructure from one vendor, they may not want to shift to the cloud environment until the benefits of that infrastructure have been maximized. On the other hand, the selected infrastructure may indicate that the client has interests in the same vendor's other technologies and software.

Another remarkable factor and especially a recent change in it that influence on software providers business models is clients' organization culture – particularly buying behavior and IT-related decision making. In academic literature, it has been pointed out that many times an organization's IT department has different perspectives than the business side of the organization and this has often complicated the IT acquisition and deployment processes (Wenzel, 2014). The output of the empirical research supports that theory. Today, for software providers working together with the business departments of the client organizations is business as usual. Most times, IT has a supportive role and it doesn't make the final decisions concerning software acquisitions as it used to make a few

years back still. While software providers generally seem to feel very positive about this change, it also means that they must understand their clients' business needs over technical side better than before. In some client organizations this has caused a dilemma as IT departments and the decision makers in there still try to possess their power instead of accepting the decreasing role. Nonetheless, the software acquirement and deployment processes have not changed only because of the transition in internal decision making in client organizations. Also, their way of working together with the software providers has become more agile. For software providers the agile co-development with the client, Proofs of Concepts and experimental approaches are business as usual today. In fact, in empirical research it was highlighted that software providers have been more ready for this kind of business model much longer, but the client organizations' cultures haven't accepted it until in recent years. On top of that, organizations self-service readiness and the readiness for data-driven business have increased constantly which has enabled more opportunities to software providers, especially to the providers of self-service SaaS and business analytics software and services.

In addition to market- and client-oriented drivers, internal factors, ecosystems and technical evolution also steer software providers business models. As most software providers represent small or middle-sized companies, they have limited resources and unique background that influence on their opportunities and decisions. Developing and providing productized SaaS solutions, for example, would be a tempting business model to adopt for many software providers but it has often been perceived as too costly. Developing standard software on productizing software service alone requires high investments and even then, the marketing actions must succeed until the solution is recognized in the markets. The empirical research pointed out that small software providers want to concentrate only on one or a very few business models and that they are prepared to fully abandon old ones when making difficult decisions concerning business model transformation even if those were written in their original mission or vision. On the other hand, sometimes a mission and a vision might be the key drivers behind business model decisions. Especially when a software provider is aiming for internationalization, it must select business models that scale. Scalability is one of the strengths in SaaS model whereas scaling the business abroad with for example consulting services alone could be an extremely slow process even if it generated better revenue in the original markets. Also, in small companies, individual representatives' roles may be huge and, hence, their individual perceptions and background might drive the company's strategic decisions

strongly. For example, in cases where the founders of the company have history with certain technologies and ecosystems it is presumable that their new company will operate and participate in those as well. Anyhow, the suggestion presented by Pietsch (2013, p. 115) to focus on very limited number of software business models was strongly accepted in the empirical research.

Finally, although the continuous transformation in enterprise software markets is explicitly visible it is difficult to predict how the markets will evolve in the future. In the research themes as AI and platform-central businesses were predicted to grow but it remains unclear how they will drive software providers' business models in a big picture. Some companies believe that the growth of AI will increase the demand for tailoring-oriented models whereas some companies have a perception that organizations in different industries are becoming more ready for self-service deployment and, hence, the need for software consulting will decrease. Finally, because of digital marketplaces, cloud-based software solutions and digitizing industries enterprise software markets can be predicted to become more global in the future.

5.2 Limitations of the study

This study took relatively high-level approach focusing on the major transitions, business model categories and software types in the enterprise software markets. While the study covered several relevant themes that influence on software providers' business model decision, deeper approach on each of them would point out other remarkable drivers most likely. Additionally, as pointed out by Knodel and Manikas (2015) and in the empirical research, the concept of software ecosystems and the academic literature around it is somewhat old-fashioned and more generic and updated theories are needed. Also, this study has been done from business perspective, but the enterprise software markets are very high-tech-oriented. With the lack of technical perspective some minor but significant differences among the business models may have stayed hidden. And, even then, different ecosystems and technology areas act differently, and the market needs are extremely volatile, so concluding generic yet detailed theories is difficult if not impossible.

Finally, the empirical research focused on one very specific group of software providers in Finland. The nature of business analytics software markets and solutions can be estimated to be very different than for example the nature of ERP software or IT security software. Hence, the findings of the empirical research should not be fully

generalized to refer to the whole enterprise software markets in Finland. In addition, this study was done with qualitative methods. Quantitative methods as addition could increase the reliability and enhance the findings of the study, but as most topics concerned in the research are somewhat confidential and related to the strategic decisions, relevant available data would have been difficult to find for the analysis.

5.3 Suggestions for the future studies

Based on the findings and the limitations of the study, some suggestion for the future studies can be conducted. First, a study with more technical perspective focusing on each business model could lead to more consistent perception of the business models utilized in enterprise software markets as well as more detailed differentiative factors in software business and ecosystems. This study, for example, doesn't delve into differentiative characteristics in software development as confrontation between open source and commercial software. Also, while the study focuses on the value-adding characteristics of SaaS solutions, studies targeted at the infrastructure and integration perspectives would be fruitful additions in the literature. Second, similar study with a focus group from different enterprise software solution area could either enhance the findings of this study or even lead to very different results. It was also pointed out in the research that there are cultural differences across enterprise software markets in different countries and, hence, similar study in another country could lead to fruitful comparison and stronger validation of the findings. And, finally, as this study took the software providers' point of view, other angles could be added on the academic discussion concerning the topic. Especially client organizations' culture, behavior and overall significance were highlighted when discussing the drivers that influence on software providers' business model decisions. For example, IT acquirement and deployment processes in Finnish organizations and especially the cultural transformations related in the processes would be a fascinating topic for a research.

6 Conclusion

Enterprise software markets consist of high variety of different players, technologies, solutions and clients from all other industries. Still, some general trends have been identified in past decades as well as predicted to grow in the future. Highly transformational markets as enterprise software markets are a fascinating topic for a thesis study.

Differentiative factors of software providers can be defined from several perspectives. In what software ecosystems they participate? What services and product they provide? Who are their clients? What is their mission? This study focused on identifying the key drivers that steer the major business model related decisions that the software providers have and what trends can be indicated based on the drivers and the changes in them from the past few years. The findings of the study indicate that software providers act very concentratedly and through client-centric approach. However, their technical background, limited resources and internal goals also influence strongly on what kind of business they run and develop.

Altogether, most solutions areas in enterprise software markets are evolving toward a condition where more often software services are productized and distributed through cloud environment. Acquiring software and switching between solutions are becoming more agile, effortless and less costly through subscription-based and self-service models. Also, a larger piece of the responsibilities related to software maintenance will be carried by the software providers instead of the client. Nonetheless, organizations have constantly and increasing number of specific needs that standard software or productized services can't fully cover. Hence, providing customized software development or in other words software tailoring will maintain its strong position and rapid growth among other business models. Software tailoring projects focus on an individual client's needs and the potential revenue streams in those projects make them extremely tempting for small software companies. Standard software, on the other hand, have the potential of scalability which is a key when the goal is to tap the global markets or untouched niche areas.

While each software provider has different drivers steering the business model decisions, they all accept the cultural trends that have shifted the way how they work with clients across industries. Today, software is developed through collaboration including

different players from the software ecosystem as well as the client's side. Agile approaches are becoming business as usual in software projects whereas the role of IT departments in organizations is diminishing. Cultural transformation is never straightforward and both, the software providers and the client organization may need to tackle issues caused by it for a long time still.

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